ECONOMICS OF PLANNING

(ÖST-ÖKONOMI)

NORWEGIAN INSTITUTE OF INTERNATIONAL AFFAIRS

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SWETS & ZEITLINGER N.V.
AMSTERDAM - 1968

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INTRODUCTION

By *John Sanness.*¹)

Since our *Norwegian Institute of International Affairs* was established early this year, we have held several seminars or conferences. As topics for our discussions we have chosen basic current problems in the field of international relations—economic and strategic as well as political problems. Our main purpose has been to clarify our own ideas through give- and take-discussions in a sober spirit, stimulated, but not disturbed, by differences of political outlook. We have even hoped to assist in clarifying the thinking of other people with sufficiently open minds to welcome clarification. If some of our foreign guests should leave this seminar with the feeling that they have received some food for further thought, and if the report from the conference should find a few interested readers abroad, we would be very satisfied indeed.

There is certainly no need for me to stress the importance of the subject chosen for this seminar. Through our discussions we approach the basic problems of the world at this moment. Whatever definition of "peaceful coexistence" we may prefer and whatever may be the limitations of this concept, competitive co-existance is a reality to be faced squarely. In our affluent societies some people do protest — and not without justification — that the central position which economic problems continue to occupy in our political and social thinking, as in our private lives, has become anachronistic. Nevertheless, the challenge of peaceful competition in the economic field remains a basic one.

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¹) Norwegian Institute of International Affairs, Oslo.

I cannot see that any traditional school of thought in politics or economics has provided us with ready answers. But inside all groupings the new challenge has stimulated new thinking. The issues to which different answers may be given in the 1960-s will not be those which dominated the arena in the postwar period. The present election campaign in the US may be the first political campaign in a major country where the challenge of the "sixties" is vying rather successfully with traditional themes.

I would be very much afraid to encroach upon the preserves of our economists. But I have a highly personal outsider's impression that somehow we are moving away from a certain type of mental rigidity in viewing economy and economics in the West and in the Communist East. We tend to modify the idea of the opposing types of societies as being fundamentally different in the sense that no elements, no experiences and "laws", no methods and techniques found in the framework of one system could possibly be of any relevance and have any applicability to other systems.

There seems to me to be a parallellism, if no inter-relation, between this rigidity in the view of economics and the rigidity sometimes produced in other social sciences operating with "patterns" as a basic concept. The stress on the interdependence of the countless characteristics of a particular society may lead to a dangerous scepticism towards evolution by intermingling and adaptation. We may sometimes feel that we are brought close to old romantic concepts of social "organisms" averse to amputations and implantations.

It may be that economic science only in the last decades and for the first time has developed concepts and techniques which over broad areas really applicable not only to one particular system or to one particular stage in social and economic evolution. If so, it may claim to have become in a true sense general and universal, even if it is not, as we know, accepted as such everywhere.

I have already in mind the topic of our next seminar or conference this autumn: problems of assistance to development countries. If in the West as in the Communist East we might still adhere to the idea that you have to accept one system with one complete pattern as it is, lock, stock and barrel, this idea is certainly not accepted as relevant by those grappling with the problems of other parts of the world. They seem not to accept this sort of mental absolutism. From this point of view it may be regretted that we had to cut out Communist China from our discussions this time. Certainly in China we are no more faced with just a replica of Soviet economic evolution, but with a very different pattern, in many of its features obviously more attractive — and maybe applicable — to Asia and Africa than the Soviet one.

THE SEMINAR

By *Harald Hallaråker*[1]).

Being a member of the group of economists chiefly responsible for the arrangement of this seminar, I would like to give you some practical information regarding the background.

In November 1959 a conference was held in Oslo on the study of the Soviet Union in general. It was prepared by a privatly established committee headed by Torkel Opsahl, Assistent Professor of Law at the University of Oslo and a former exchange student at the Moscow State University. The plan had grown out of conversations with other Norwegians interested in the subject, among them Professor Brodersen.

As a result of the conference, there came into existence the Norwegian Society for Soviet Studies. Chairman of the society is Jahn Otto Johansen.

Several academic disciplines were represented in this society. A number of economists became members, among them Bucher Johannessen, Thor Wessel, Jan Serck-Hanssen at present studying economics in Holland with Professor Tinbergen, and myself.

Some time later—in April 1960—we found the time had come to establish a separate group of economists. We began with informal meetings where we discussed economic questions. Dr. Sanness became interested in our discussions, and the group came into close cooperation with the Norwegian Institute of International Affairs. Since then our activities have increased considerably. We have, for instance, supported by the Institute, initiated a periodical called

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[1]) Office for Eastern Economy, Norwegian Institute of International Affairs, Oslo.

"Østøkonomi" ("East Economy"), and have also contacted economists in industry, trade and administration in Norway and other countries. Our experience is that there is a lively interest in information about Eastern economy, especially, of course, among economists.

And now back to our seminar. Already in April we began planning. It has been our intention to keep the seminar on a scientific level, and with the participation of the lecturers who were kind enough to accept our invitation, I feel sure that our expectations will be fulfilled.

It was our hope to include on the list of distinguished lecturers one from the East European countries, namely Professor Oscar Lange. We have received a letter from him in which he regrets that he is unable to visit Norway now owing to other commitments, but that he hopes to visit this country later. We too are very disappointed that we will not have the pleasure of meeting him, but in spite of his absence I hope the seminar will prove a success.

We have asked Mr. H. J. A. Kreyberg to take the chair. He is head of the Institute of Economics at the Norwegian Technical University in Trondheim and is familiar with our subject.

ECONOMIC DEVELOPMENT IN THE SOVIET UNION AND EASTERN EUROPE, WITH SPECIAL REFERENCE TO STATISTICS

By *Michael Kaser.*¹)

Traditionally the first question posed to a "Sovietologist" in any sphere is "What reliance can be placed upon the officially-released information?" In the economic field the corresponding question is "Can the government statistics be used?" Indeed this was the nature of some of the earliest work by economists outside the Soviet Union upon the Soviet economy, once this economy had in the 'thirties exhibited its essential difference from the other economies, of the world. Sergei Prokopovich, Colin Clark, Maurice Dobb, Paul Baran were among the main initiators of this enquiry and, since the War, very many more — some of whose work I plan to dwell on in a moment — have participated in the debate. It should of course be the first rule of the applied economist to examine his data and economic statistics have come a long way since, say, Mulhall published his *Dictionary of Statistics* at the turn of the Century. The econometrician's need for usable material has more recently intensified the critical approach to statistics.

It would be naive to imagine that all the enquiries into the validity of Soviet — and since the last War of eastern European — statistics were inspired by a rigorously scientific aspiration for exactitude; this is as disingenuous as the official Soviet contention that any questioning of their published statistics is politically motivated. Leaving aside ill-informed or deliberately-distorted recomputations of Soviet (or eastern European) official data, the immixation of political attitudes into the field of statistical appraisal can be deplored only for concentrating more attention

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¹) Research Division, Economic Commission for Europe, Geneva.

upon these particular countries than a rational allocation of intellectual resources should perhaps require. While vast fields of statistical exploration and verification remain inadequately tilled — the economic statistics of under-developed countries and the applicability of econometric methodologies, the statistics of social expenditures and their effects in all countries, to name two examples — the present effort to calculate data for the statistically best-endowed economy in the world may be misplaced.

I say "best-endowed" and not "best-served", for Norway — and I name this country not only because we are enjoying its hospitality — may collect fewer basic statistics but elaborates them into finer parameters of the economy. Soviet regulations that every single enterprise report its outputs, inputs and flows of funds to a central authority, be it in industry, farming, transport or trade, secure an immense statistical wealth for the Soviet economy. Data collection in eastern Europe falls a little short of the Soviet catholicity — notably in farming and small-scale industry — but still creates a better primary endowment than in western Europe. It is because this wealth has been squandered, or because such use as is made of it is reserved for the managers of the economy alone, that outside computations are both defensible and desirable. The accurate assessment of Soviet parameters is desirable because of the very size of the economy and of the example of its management system.

The criteria of size may well be appropriate for the economic historian who must determine development in the major regions of the world but, so far as comparison between the USSR and the USA is concerned, the idea of „competition" overlays the second reason. The eastern European economies do not warrant the same intensity of enquiry by reason of their individual size — although in aggregate they equal about half that represented by the Soviet economy and this perspective is often neglected. But they merit perhaps even more attention than the Soviet model on the second score, the measurement of the efficiency of their management system.

At first sight, this contention might seem to be of academic interest, since the majority of the population of the eastern European area on the eve of the war formed part of economies falling in their attainments not significantly short of western European standards (eastern Germany, Czechoslovakia, parts of Poland and of Hungary). There is currently scant political likelihood of the developed market economies embracing the management system now effective in the eastern part of the Continent (indeed elements of practice and theory tested in market environments are ripe for use in centrally controlled systems). Nor does a start from a fairly high level seem the best model for the poor, growth-anxious states of Africa and Asia.

It is for this reason that the analysis of dynamic parameters of the poorer parts of eastern Europe should take precedence over that of the richer areas, that is, of the real rate of growth and the resources and policies causing it, in Albania, Bulgaria and Rumania and in the poorer agrarian regions of the others — Slovakia, the Hungarian Plain, Matopolska and Mazowsze.

By the same token, it is not the index of national product and other parameters of the Soviet Union as a whole which are of key interest but those of its component regions — of the poorer regions and the help afforded by the richer — if the study is to resolve itself into a model for those economies which more than anything else need rapidly to grow.

I might here interject that this has been a recent objective of the Research Division of the Economic Commission for Europe, from which I am on sabbatical leave: in 1957 we published a special study on Soviet Central Asia, in our *1959 Survey* a regional analysis of the USSR and the issue of the *Economic Bulletin for Europe* to appear in November will contain articles on Albania and Bulgaria.

One might summarize this *apologia* for scruples in the statistical examination of Sovjet and eastern European developement by reference to the importence of the goal of such study: the better the results obtained from managing a given factor endowment in these economies, the more serious must be the consideration of governments of under-developed countries eclectically to choose from Soviet and east European planning and control techniques. It is not my intention to examine those techniques or their several efficacities, although I am keenly interested in their study, for that is the subject of other papers to this meeting, nor to compare the overall results with those shown currently or in the past by the market economies, for that would extend too widely the limits of this hour's contribution. My aim is to fit into the pattern of the organizers' programme by holding to the title and examining the extent of economic developement in the planned economies of Europe.

Even so, in almost anything but a book or lecture course, one must make a crude simplification of the words "economic development" and equate it to rate of growth. Of course, it is nothing like a true equivalent and I have been far from alone, in other writings, in seeking to discount the measurement of economic competition between systems in terms of physical quantities alone. But it will serve as the major element for the purpose of judging the merit of the planned economies as exemplars of those countries which, as I said earlier, need rapid growth more than anything else. In company with all western and some eastern economists, one can only take net products as the key paramenter of growth, i. e., the increment annually made available for distribution after allowance for capital consumption. This concept is as acceptable to Marshallians as it is to marxists but its translation into figures is not only as difficult to determine as in western countries (because of the difficulty of derving real depreciation rates — though less so as the current round of capital-stock inventorization proceeds in the eastern countries) but especially complicated by coverage and valuation problems. These again are a problem, which in the present paper one may only raise and not treat in detail.

The most frequently used measure of net output is net national product but the area of production in the official series of all the countries in which we are interested is limited to material goods and a few services, notably transport and trade, closely connected with their distribution. The difference between this concept and that used in Norway and most other western countries (France notably excepted) is such common knowledge that one need not dwell on it. My own agency, through the Conference of European Statisticians, is arranging the realignment of national accounts towards comparability and I would refer you to that work, among others.

The valuation problems are partly those of comparing any economies at different times (growth being higher if measured at prices of early rather than of late years within the period covered) or not contemporarily subject to the same price relatives. Tariffs and elements of imperfect competition obfuscate, without nullifying, comparisons between market economies. But the comparison with or between the Soviet Union and eastern Europe is made more difficult by the fiscal structure (by concentrating taxation on consumers' goods), subsidies (fortunalety now disappearing) and government price lists (which tend to introduce branch differentials at variance from those found in market economies, e. g., in relatively undervaluing agriculture and trade and overvaluing industry, though this is not to say that a market economy necessarily requires the high price it accords trade operations).

All the countries we are considering at this Seminar publish estimates — on their own definitions — of net national product but few of them supply the branches of origin. Outside the formal national accounts, output indexes of the main branches — industry and agriculture — are always, but not exclusively, published in gross terms: gross, that is, not only of depreciation but also of the value of inter-enterprise exchanges. Most, if not all, countries make some allowance for changes in inter-enterprise relations which would reduce the validity of the index for short-term planning and control purposes. But changes in industrial outputs which may bring no change in the aggregate of final products can also effect the gross index without affecting the net. Thus in the past $3^1/_2$ years the gross output of the Soviet building materials' industry has been growing at a rate roughly $2^1/_2$ times faster than the average for all industry. Partly this reflects real increments used to support the housing drive, but partly this is a result of the large-scale introduction of prefabrication. Cement which was formerly poured *in situ* and was therefore registered only once in the gross output index now appears twice — for the second time as part of the value of sales of prefabricated concrete components.

In turning to the figures of growth — which in view of the aims of this Seminar cover only the periods subject to long-term planning (since 1928 for the USSR and since 1950, as a convenient common date, for eastern Europe) — it would have been ideal to have provided estimates at least no more ambiguous than those available for western Europe. This cannot be done but the volume of statistical work to which I refered at the beginning of this paper — mostly American — is directed to this end.

May I start with data on the Soviet Union? The official figures of net domestic product, subject to all the reservations just made, show an annual rate of growth, of material goods only, of 14 per cent for the 22 years since 1928 excluding the war and reconstruction (1941 to 1942 inclusive). For the period of the first and second five-year plans, i. e., before defence preparations began to check the growth of the economy, the official index registered a mean annual increment of 15 per cent and this has been the period most favoured by non-Soviet statisticians for alternative estimation, which however include outlay on services. Apart from the $2^1/_2$ or 4 per cent (on differing price subsumptions) put forward by Colin Clark, these show between 7 and 9 per cent (Gregory Grossman, Naum Jasny, Julius Wyler and a deflation by Peter Wiles of a series of current-priced estimates by Oleg Hoeffding, Abram Bergson and Alec Nove). This latter composition also supplies a post-war alternative (1948—1955) of 9 per cent per annum which compares with the $13^1/_2$ of the official series. All of these estimates were essentially oneman jobs, with all the limitations that entails in research into detailed components of product and their prices. The work of Abram Bergson differed from these in that very factor: after producing an account for 1937 in current prices and his own ''adjusted factor cost'' (virtually confined to netting out tax and subsidy incidence and charging a standard rate of interest on capital), he led a team at the RAND Corporation of Santa Monica, California, first to provide current priced estimates for other key years — 1928 by Oleg Hoeffding and 1940, 1944 and 1948 with Hans Heymann, and secondly to link these into a constant-price series. This constant-priced series is still awaited but a number of elements for the calculation have appeared, notably studies in price trends from 1928 to 1955 and additional accounts for 1949 to 1958 (though only at current prices and not at the factor cost of Bergson's scheme). One might observe that two other current-priced studies for a recent year (1955) of this RAND series and of a similar degree of detail (the one we published in the ECE *Bulletin* in 1957 and Alfred Kühne's of Berlin) together with a briefer one for 1957 by Alec Nove and Alfred Zauberman confirm the accurancy of the RAND aggregates and hence the calculations of the real growth rates of the entire economy to which we can look forward.

The net output of industry, the biggest contributor to the growth of national product has also been the subject of intensive team work at the RAND Corporation and a recently-published study by Norman Kaplan and Dick Moorsteen has not only presented the results but conveniently brought them alongside other alternatives to the official index. These alternatives (Donald Hodgman, Naum Jasny, Warren Nutter, Francis Seton, Dimitry Shimkin and Frederic Leedy) do not differ from the Kaplan-Moorsteen series by more than could be explained by different computation methodologies or the degree of disaggregation. I say "could be" because not all have been so forthcoming on their sources and methods as the RAND team, whose publication comprises two volumes summing to 284 pages. The only comparably documented study is Hodgman's but his appeared before the change in Soviet statistical-publication policy at the XX Party Congress and was hence rather narrowly though not inaccurately based. I might interject that I say "not inaccurately" not because I have checked Hodgman's estimates of individual products with later Soviet data but because when the Soviet statistical abstract first appeared I checked against it every figure on the Soviet Union used by at at ECE in the preceding *Economic Survey of Europe*. 70 per cent were dead accurate and 20 fell within a range of per cent.

One would not be wrong, therefore in using the Kaplan-Moorsteen index as the best available alternative to the official series. If, once again, the war and immediate post-war years are left out of account the rate of growth over 22 years (1928 to 1958) is $9^1/_2$ per cent per annum. This compared with 16 per cent shown for gross output in the official series. There are numerous reasons for the divergence, not all, but most, telling against the usefulness of the Soviet, and in favour of the Kaplan-Moorsteen, index but time will hardly permit me to enter this by-way. What is of interest is that, as the authors point out "the divergences pervade all commodity groups and all sub-periods, except machinery in the 1940—1950 period" until 1950. In that years the *Central Statistical Administration* of the USSR abandoned the inadequate 1926—27 price series and have since used contemporary, though not current, price sets. From 1950 onwards it is important to note that the divergence is very much less, with the Kaplan-Mooresteen index growing somewhat less fast. A further price-reform is under study and that for retail prices and the wholesale prices of consumers' goods is scheduled for introduction with the decimation of the internal rouble on 1 January 1961; the depreciation component will, thanks to the capital revaluation, be rationally distributed between branches; there may be less divergence of gross from net since the Seven-year Plan Directives set above-average targets for the basic, rather than the fabricating, sectors.

To summarize, the Soviet gross industrial output index has risen annually by 12 per cent during 1950—1958, whereas the Kaplan-Moorsteen net, but more narrowly-based, calculation shows 9 per cent. The $8^1/_2$ per cent gross increment scheduled for 1959—1965 is unlikely to greatly differ from an increase calculated in net terms. I cannot however leave this net-gross problem without referring to Academician Strumilin's tussle with it. He is of course the Grand Old Man of Soviet economies and, since Khizhanovsky's recent death, also of planning. In an essay written in 1957 but published in a collection of his papers, *Ocherki sotsialisticheskoi ekonomiki SSSR*, last year he uses the published labour-input content of production and an assupmtion that Marx's *Mehrwert* adds 75 per cent to labour to derive a marxist "net value" which has much in common with western "value added". For the twenty non-war years of the period he covers (1928—1956) his annual net rate of growth is 14 per cent, that is, still considerably above the $9^1/_2$ per cent rate of the Kaplan-Moorsteen result. Rolf Wagenführ of the European Economic Community and Milos Vanek of Munich were the first to spot Strumilin's computation although I think they attached too much importance to it as a recomputation, since it assumes constant capital coefficients to labour.

Since at the Seminar we are anxious to consider the contributors to this industrial growth (in the absence of estimates of the contributors to overall growth), Francis Seton's recent pioneer essay at fitting a Cobb-Douglas production function is highly relevant. Using both his own and Hodgman's net output index he shows that for the pre-war period 1928—1940 "an average output growth between 13 to 15 per cent per annum appears to have been achieved by means of growth rates of 8.7 per cent and 18.1 per cent in labour and capital, respectively, coupled with a rate of technical progress of 1.5 per cent per annum". For five post-war years (1950—1955) Seton's more tentative functions indicate that "in spite of yearly increases of 5 per cent in the labour force and well over 10 per cent in fixed capital, these factors accounted for less that half of the yearly output growth, the other 55 per cent or so being due to innovation and general improvements" — the contribution of technical progress organization, etc. having risen to at least 6 or 7 per cent per annum.

To conclude this review of Soviet industrial developement, let me cite Kaplan and Moorsteen's cautions conclusions from applying their output index to Soviet data on industrial capital and manpower over 1928 to 1957, namely that the ratios both of capital to labour and of capital to output have increased monotonically and substantially. Both these conclusions are consistent with Seton's findings, the decline in capital productivity being set off against the acceleration of techical progress.

In order, before we leave the subject of the Soviet Union, to have time for a few words on farming and the overall constribution of factors to growth, permit me to dismiss the other branches of the economy. The Tsars bequeathed their revolutionary successors with a railway network which had been built well ahead of demands: perhaps in enlightened execution of the sort of development policy the World Bank is practising and economists like Hirschmann are preaching — namely that infrastructure must precede productive capital; perhaps at the behest of the rich Donbas ironmasters. As we put it in our last ECE *Survey* "the Soviet planners have until now drawn maximum advantage from depressing the input/output ratios in transportation. They have chosen to intensify the use of the railways to free recources for other productive ends, rather than to invest in remoulding transport to serve a relocation of production". I imagine that relatively few underdeveloped countries of today have the same relative wealth of transportation facilities as did the victors of the October Revolution: save perhaps for India where one might take advantage of being Her Majesty's subject to aver that the motives of the British Raj may have been as mixed as those of the Tsar.

Although studies on the growth of Soviet agriculture are under way in RAND, there are no satisfactory long-run alternatives to the Soviet estimate of gross farm output. This shows a mere 2.7 per cent annual increase between 1928 and 1958, if spread over the 21 years outside war and post-war restoration (a year later than for industry). The divergence between gross and net indexes in farming is a less complex problem than in industry — the only duplication is in fodder — and no possible recomputation could bring the tiny output growth up to the rate of capital input into the branch. It is not unreal therefore to generelize the conclusions of Andrew Frank on the Ukraine to the whole Soviet economy, for that republic not only shows these same trends but is a major component of Soviet farming. His study shows that "general productivity" — i. e., the rate of technical progress we have just spoken of in the industrial studies — "rose 28 per cent in industry but declined 13 per cent in agriculture between 1928 and 1955. In other words output in industry rose 28 per cent more than did measured inputs of labour and capital; but output in agriculture rose 13 per cent less than did measured inputs of labour, capital and land." The fact that the average increase in technical progress in Ukrainian industry is remarkably close to the Kaplan-Moorsteen results for all Soviet industry supports the generalization of Frank's conclusions.

One may suggest therefore that capital productivity declined in industry but rose in agriculture, that is, in respective contrast to the increases attributable to organization and technical progress. Only this furthermore can explain the extraordinarily low average capital-to-output ratio revealed last July by the results of the fixed asset census. Mr. Kosygin announced that the productive fixed capital stock in 1960 prices was 2 400 bilion roubles at the end of 1959 and Mr. Khrushchev had earlier cited figures which showed that the 1959 net output of this productive capital (that is, the Soviet definition of national income) was 1 350 billion roubles in 1955 prices. The capital to output ratio of 1.8 would be somewhat higher under the valuation patterns used for comparable ratios in a market economy (notably because turnover tax is not incorporated in asset values) but it is low enough to bear out the contentions on capital productivity differentials. A recalculation of the Norwegian global, capital-to-output ratio (for 1953 in 1955 prices) to Soviet definitions reduces it from 3.6 to 2.8 and one should note that the Norwegian figure for investment goods alone is 1.7.

If, therefore, one wishes to offer Soviet technique and organization as a factor for copy by under-developed economies, one must emulate only the industrial applications, for the benefits brought to that sector were partly negatived by the losses occasioned by organizational change in agriculture (collectivization, overcentralization, lack of incentives, supply of large rather than small farm equipment, etc.). Some of these organizational defects have been remedied since Mr. Khrushchev's famous speech of September 1953 but they seem now to have been halted and on the need for further improvements the negative view of Mr. Khrushchev and Alec Nove is opposed by ECE and more recently Academician Strumilin. (These alliances are, I think, coincidental!)

I thought it right to devote nearly all my time at this Seminar to the Soviet Union. Let me therefore restrict myself, in covering eastern Europe to a listing of their official statistics of rates of growth. Between 1950 and 1959 their net material products have risen by the following annual increments, beginning with the most dynamic economies which were of course also the least developed (or in the case of Germany with capital unrepaired or unused) at the outset: Albania 11, Rumania 10$^1/_2$, Bulgaria 10, eastern Germany 9, Poland 8, Czechoslovakia 7$^1/_2$, and Hungary just over 6 per cent. Gross industrial product has everywhere risen much more rapidly — Albania just over 20, Bulgaria 16, Poland just over 13, Rumania just over 13, eastern Germany nearly 12, Czechoslovakia 11 and Hungary 10 per cent. For lack of time, let me refer you to the ECE *Survey for 1958* for a close analysis of the relationships between gross and net output in these countries and merely mention the conclusion that, after the early institutional changes, the two rates have not been subject to much divergence. The 8 og 9 per cent annual increments in industrial output which the current round of new plans envisage until 1965 may hence be taken as reflective of net increments. Moreover, it may be noted that the decleration is greater between plan and the past 8 years in these countries than in the USSR.

Our conclusion with respect to the utility of the present contribution of technique and organization is probably the same for eastern Europe as for the Sovjet Union: significant in industry but a disutility in farming, for these countries' agricultural growth-rates since 1950 and planned to 1965 are far below the industrial. No one has yet fitted production functions to the eastern European series but there is a project on hand for an all-European study by ECE on this score.

DISCUSSION

Various observations were made by Dr. Rolf Krengel, Dr. Robert Lamberg, Mr. Leif Johansen and the lecturer. The debate concentrated on the following topics: the reliability of Soviet and East European statistics, the factual economic developement in industry, transport and agriculture, and the capital to output ratio in the Soviet Union.

It was suggested that the doubt still existing in Western countries concerning production growth rates as published by the Soviet Government may lose every much of its weight if compared with the rates of growth of some Western countries which after the war have also been able to attain very high rates; for instance in the period 1948—1958 the rate of growth in Western German industry was higher than that which was officially published by the Soviet Union. Calculations made by "Deutsches Institut für Wirtschaftsforschung", Berlin—Dahlem, concerning the Soviet industry group "A" (the production goods industry) have shown that the Soviet figures may be considered quite reliable for the period after 1950. Before 1950 the Soviet Union was in what Rostow is calling the "Take-off-period", and during such a period there always are very great difficulties in measuring the growth of production, primarily because of the enormous changes taking place in the production structure of society, with new products occuring, old types disappearing etc. It was held to be more rewarding to discuss where the Soviet Union stands today and how the developement is likely to be in the future, rather than to concentrate attention and energy on industrial growth rates of the historical past.

As to the general low capital to output ratio in Soviet economy three explanatory causes were suggested: 1) In a rapidly growing economy a large share of the capital is relatively new. 2) The Soviet Union is still richer in labour than in capital, and this may make the capital to output ratio rather low. 3) There seems to be no or almost no idle capacity.

Concerning the measurement problem some speakers held the concept ''gross national product'' more relevant than ''net national product''. One speaker said that even this concept might not be the most relevant if one is trying to measure the applicability of the economic system to the underdeveloped countries. In this case the most relevant might be to concentrate one's attention upon the achievments in the production of a few goods like for instance steel, power etc. which are crucial to developement.

In his last remarks Mr. Kaser said that the reason for his rapid dismissing the subject of railway transport and not going into detail in the precise output figures for agriculture, was because he did not feel that either of these two sectors provided a model for the countries requiring rapid growth. His point had been that the seminar was interested in the applicability of organizational developement in the Soviet Union. The main reason why we should be interested in the Soviet economy would then be: Is the unique organizational system of the Soviet Union and the East European countries applicable to other economies? Therefore it was necessary to dissociate ourselves from measured inputs of labour and capital and examine this residual. However, our examination of what this residual contains is obvoiusly in its infancy, as it is in econometrics as a whole, whatever country we are thinking of.

OPERATIONAL ASPECTS OF SOVIET ECONOMY

By *Maurice Dobb.*[1]

In recent years economists have ceased to think in purely static terms, and to imagine that the only kind of efficiency-problem is that envisaged by the allocation of resources so as to equalise their marginal yields in all uses. Yet because of past preoccupation of economists with the latter, it might be as well, perhaps, to start by pointing out, rather obviously, that there are three main types (at least) of efficiency-problems to be distinguished.

Firstly, there is the dynamic problem of raising the productivity of labour in the course of economic change and growth. The main agencies of improvement in this context are accumulation of capital, technical innovation and improvements in human organisation (in which I include rationalisation of managerical techniques and methods, improved specialisation and standardisation in production and division of labour).

Secondly, there is the problem of so co-ordinating different stages of production and different productive units as to ensure a smooth and continous flow of production, thereby avoiding loss of time and of output through interruptionsm, idle capacity at some points and overloading of plant and of personnel at others. Within an individual plant or firm this is known as achieving a «balanced process». But there is also the same problem for the economy as a whole as regards the supply-demand interrelationships between the network of productive units of which the economy is composed.

Thirdly, there is the problem of so allocating productive resources that in the aggregate they achieve the maximum result, measured in some way or other. This is the favourite economists' problem, and consists in adjusting resouces at the margin of various employments until no further net gain is possible from further marginal shifts. The result may be measured in various ways in terms of given end-products valued or weighted in some particular way; but the maximisation of consumers' welfare or want-satisfaction has usually been taken by economists who have discussed this problem as the criterion of what the composition of these end-products should be. May I be allowed to add in parenthesis that the result of the discussion of welfare economics over the two past decades seems to me to be that no *precise* definition of such a welfare-optimum is possible, and that as a goal of policy it must necessarily be regarded as something rather vague and approximate?

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[1] Trinity College, Cambridge.

Hitherto it has been the first two of these three types of efficiency-problem that has engaged the attention of Soviet planners and policy-makers. An abnormally high rate of growth has been furthered by a high rate of investment; but probably more important in this connection has been the fact that an unusually high proportion of investment has been devoted to the development of the capital goods sector of industry. The system of supply-allocations based on the method of material balances, of which we shall give a brief description in a moment, was designed to secure an overall balance in the sense of our second type of efficiency-problem; and when Soviet statements refer to ''maintaining the requisite proportion in developement'' as one of the prime objectives of planning, it is to this that they evidently refer, and *not* to the allocation-problem as this has been conceived by Western ecconomists with their marginal preoccupation.

This must not be taken to mean that the third type of problem has been altogether ignored. But I think is it not untrue to say that until comparatively recently and especially in the pre-war decade it held a very secondary place. This was partly because during a period when the emphasis was on rapid growth at all costs other considerations were almost inevitably sacrificed to this emphasis and to a system of priorities based on a series of ''main points of consentration'' (or ''key fronts'') — as indeed happens in any war economy. Another way of saying the same thing is that when the time factor in achieving certain aims is given special weight, this may conflict with a principle of maximum economy of means, since one way of "gaining time" is to spend more means and to sacrifice secondary objectives. To this I belive we have to add the consideration that in times of scarcity the priorities in the supply of consumer goods are fairly simple rather than complex, and it may reasonably be held that the results one can achieve by rule-of-thumb methods will not be so much inferior to the best that in these circumstances one could achieve by more studied artifice.

With the raising standard of life and increased emphasis on meeting comsumers needs in recent years there seems no doubt that in one form or another our third type of efficiency problem is receiving a greater measure of attention, and that it is likely (provided that there is no war) to take an increasinly important place in the future.

Some have, indeed, suggested that this growing attention to the problem of optimum allocation is still deficient in a crucial respect: namely, that it only seeks to minimise the cost of producing an arbitrarily-defined set of end-products — defined, that is, by the requirements of the Plan, and bearing no necessary relation to the order-of-importance of consumers' wants. However in view of the insistence officially placed on satisfying in increasing degree the wants of consumers (cf. Stalin's definition of "the basic economic law of socialism")¹) this contrast seems to be an artificial one. While it is true that there is no automatic mechanism whereby output in the consumers' goods sector is adapted to the pattern of consumers' demand (as there is in theoretical models of a competitive free market system), we shall see that there are ways in which consumers' demand exerts an influence on producers, and there is a growing insistence on measures to enable this influence to be felt.

We are going to start with a description of the system of supply allocations and the part that it plays in planning. Here I shall

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¹) This was defined in his *Economic Problems of Socialism in the U.S.S.R.*, published shortly before his death, as: 'maximum satisfaction of the material and cultural requirements of society", which affords the "purpose" by which the "balanced developement" provided by planning is guided.

begin by describing in outline the traditional system as it grew up under centralised Ministries until three years ago; then indicating any respects in which this has been significantly altered by the regional decentralisation of the last few years (so far at least, as such alterations have become known).

The traditional method has been that as soon an industrial enterprise knows what its production plan for the coming year will be (sometimes even before), it submits a statement of its supply-requirements to its appropriate industrial supply department *(glavsnab);* supporting this statement with coefficients ('norms') relating inputs to outputs, and indicating also second-best choices for substitute-materials if the preferred supplies are not available. Thus the higher bodies, in drawing up their allocations have before them the stated requirements of the industries and of the various enterprises within each branch of industry. In preparing the allocations at top levels use is made of the preliminary material balances prepared by Gosplan for the past period and the coming period (pre-war these balance were constructed for between 400 and 500 different products; now apparently for about 1000). Each balance consists, on the one side, of the output or anticipated output of the product in question; on the other side of the main structure of its consumption, together with the average technical coefficients (norms) governing its use in various lines of production. This is, of course, the same thing essentially as constructing an input-output matrix.

From whichever level they start, allocations are made on the general principle that at each stage they are broken down to the organisations at the next level below, and then at this level subdivided among the units within the sphere of these organisations (formerly this was in the first instance to the level of a branch of industry, and then from the industry among its constituent enterprises.) The complete break-down is accordingly not worked-out at the topmost level. Once, however, the allocation has been finally broken-down to the enterprise level, the enterprise proceed to enter into contracts with supplying firms or with the sales-departments *(glavsbyty)* og the producing industries, in order to arrange detailed specifications regarding delivery-requirements, delivery-dates etc. One could, therefore, describe these allocations as constituting a license to purchase, but no more than this; actual delivery-arrangements within the limits of this license or permit being the responsibility of the enterprises themselves.

All products destined for "productive consumption" by another enterprise (i. e. everything except final consumer goods destined for the retail market) have been traditionally classified according as they were subject to centralised or decentralised distribution. It was the former that came under the allocation-system which we have briefly described: a category that included most heavy industry products, raw materials and fuels and building materials. Consumer goods, save for some specially scarce items, to-day belong apparently to the decentralised category: i. d. retail or wholesale organs place their orders directly with the sales departments *(glavsbyty)* of the consumer goods industries (departments which are now, however, subordinated to the Ministry of Trade of the Union or the Republic, to render them, in negotiations between retailers and producers, less a spokesman of the latter and more responsive to the demands of the former than they used to be). The old distinction within the "centralised" category between "funded" and "quota" goods (according to whether their allocations was controlled from the highest level of the All-Union Economic Council or by the Ministry of the producing industry) — has been apparently replaced by a distinction between products (or quotas of a product) distributed on an all-Union scale, those distributed inside a particular Republic but beyond the boundaries of an individual economic region, and those distributed inside the economic region where they are produced (the first two categories being allocated by the appropriate *glavsbyt* attached to Gosplan at the All-Union level; the third by the appropriate *glavsbyt* at the Republic-level).

As regards the procedure for constructing the annual (operational) plans (and the quarterly plans within it), it has been the practice about half-way through the year for Gosplan to draw up provisional targets ("control figures") on the basis of the preliminary material balances that we have mentioned, and to pass these to the various industries (now presumably to the 120-odd regional economic councils). After further break-down these would then be passed down to the individual enterprises. An innovation introduced, apparently, by the latest Seven-Year Plan is that provisional targets for each of its constituent years are stipulated for the main products, and not merely the quinquennial perspective as formerly. An approximate idea of the annual targets is accordingly now available to the industries much earlier.

The enterprises then proceed to pass their own opinion on these provisional tagets. As we have seen, they also base upon them their own estimates of supply-requirements, including demands for new equipment and for labour. At each stage in the return journey back from the enterprises to Gosplan, the original draft targets will be reconsidered, amplified and possibly revised, until Gosplan finally submits the results again to the test of the balance-method to secure a final adjustement and fit. Sometimes there may be more than one passage to-and-fro between Gosplan and the industries in the course of mutually adjusting revised targets with revised supply-requirements. These later stages, however, are apt to be subject to a rather strict time-limit, which severly curtails the extent of mutual consulation, and imposes the need for adjustments in these final stages to be made within the planning mechanism itself. (Even so, apparently, there is often time only to recalcute those balances which involve so-called ''first-order linkages''; those of second or third order being adjusted only ''where the changes are significant ones'').[1]) If consultation with lower levels is too ruthlessly sacrificed to speed, the final result may suffer from being unrealistic. On the other hand, too much consulation and parleying may have the no-less-serious disandvantage of leaving those at the production-level too long in doubt about their precise commitments and about supply-availabilities (and there have been occasions when the plans have not taken final shape until after the start of the period to which they applied — even as late as March or April of the year in question).

If one may hazard a generalisation, one could perhaps say this. Planning must always consist of a two-way process, of data, requirements, criticism from below upwards, and of targets and directives from the top downwards; managements at the lower levels knowing intimately the microscopic situation, its possibilities and limitations, and the higher bodies knowing the general shape of the macro-economic situation, its needs and its constraints. Successful planning has to be a blend of the two; but in practice the blend may vary, and what places the strictest limit on the blend is probably the time-factor. There may also be a certain political conflict in the two-way process, since the industries and the enterprises will tend to have a not unnatural bias in favour of "loose" planning and lenient targets, not only in the selfish pursuit of an easier life for themselves, but, more justifiably, to provide a "safety margin" against unforeseen contingencies, interruption or failure of supplies etc. Reacting against this bias planners and policy-makers are likely to lean towards "tight" planning and the setting of targets and coefficients which keep the managers of enterprises in their shirtsleeves and on their toes.

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[1]) A. N. Efimov quoted by J. M. Montias in *American Economic Review* Dec. 1959, p. 976.

It would seem that in the past, and especially in the pre-war years when construction was "against the clock" and across the lengthening shadows of war, many of the economic difficulties of the time, (the interruptions in the "balanced flow" of output owing to scarcities, non-arrival of supplies, overworking of equipment, tendency to sacrifice quality and 'assortment' to quantitative fulfilment of an output target etc.) were due to a continual forcing of the pace by over-tight planning; and this at a time when there were insufficient reserves to provide sufficient flexibility and "room for manoeuvre". As we have suggested, this is not necessarily a sign of irrationality, since when results are measured within a fairly narrow time-horizon, one way of "buying time" is to use resources more lavishly than one otherwise would on objects of high priority at the expense of ends which (judged within this time-horizon) are of low priority. (One of the things sacrificed at this period, of course, was the increase of consumer goods production.) But viewed as a long-term policy this will be uneconomic,¹) by the criterion of our second type of efficiency-problem alone; and one form that increasing attention in recent years to questions of efficiency has taken seems to have been a greater attention to the "realism" of planning targets and

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¹) Except in so far as, in achieving certain growth within ten years instead of (say) twenty, one is thenceforth able after the tenth year to use the results of this growth to promote *further* growth, and so on cumulatively.

the introduction of greater flexibility by the accumulation of reserves and a greater desentralisation of supply-arrangements.

I need hardly add, perhaps, that the task of planning is not finished (at least in a system of the Soviet type) with the construction of a set of plan-targets; possibly it is not even half-finished. Nothing can go exactly according to programme, even in the most well-ordered world. Some flexibility has to be allowed for to meet unforeseen contingencies or imperfect reasilm in the plan. Economically speaking, this can only be provided for by the holding of reserve stock at key points — which as we have seen were notably deficient in the pre-war period and the immediate post-war years; also perhaps by holding a certain amount of reserve capacity of equipment and manpower (although this is, of course, as much an offence against our second type of efficiency as interruptions in the production flow would be in consequence of shortages or diversions of supplies). Administratively, flexibility is afforded by provision for an enterprise's plan to be altered with the sanction of higher authority (effectively this seems to mean the administrative department for the industrial branch, now under the regional *Sovnarkhoz*), which issues what is termed ''operational corrections''. Sometimes this is done on the initiative of the enterprise, sometimes of higher authority (e. g. owing to the discovery of a bottleneck in some product and the need to cut its consumption by users and step-up its output by producers of it; plan-revision here playing the role, more directly, of short-period price fluctuations in a free market system). Financially flexibility is afforded by the existence of so-called ''unplanned credits'' (nominally subject to a maximum period of one month) to meet ''above-plan'' needs for inputs or unforeseen production delays (e. g. due to late-delivery of supplies); also ''supplementary credits'' to cover needs arising from ''operational corrections''. It will not of course, necessarily follow that when revisions have been sanctioned by higher authority that the supplies will be available to make them possible; and the ''operational correction'' apparently carries no gurantee to this effect. This may be said to be the crucial difficulty in making revision to the plan-in-process smoothly: that of enabling changes in supply arrangements to match changes in output-targets. But provided that the supplies are available, greater decentralisation of the actual supply-arrangements is likely to make for quicker adjustments.

Before we come to the question of consumer goods, and our third type of efficiency problem, there is something more to say about planning of producer goods (Group A industries according to Soviet classification), especially of the planning of investment. It will be clear that in any growth-process an important rôle will be played by what may be called a circular production-process within this sector (to distinguish it from the straight-line production flow from primary stages to consumer in terms of which economists are, perhaps, too apt to think). This will not directly and immediately have reference to any want satisfications of individual consumers, since for the time being none of the constituent products will have a destination outside the producer-goods sector. The output-pattern of this circular flow will be dictated by the internal requirements of the growth-process. Belonging to it, however, there will be a problem of allocation of resources (other than that dictated by the output-pattern of the production plan): this appears essentially as a choice of methods of production or a choice of technique, which could be called a choice between using labour to work machines or to make them (since more labour-saving machines are apt to cost more to make — at any rate as between any pair of alternatives where an economic choice is involved).

It is to deal with this type of problem that Soviet planners and ''project-makers'' have utilised the so-called ''coefficient of effectiveness'' of an investment project (or its inverse the ''period of recoupment''). On this question there has been considerable discussion in the course of the last ten years or rather more. At first the notion met with considerable doubt and criticism; partly on doctrinal grounds because it smacked of a bourgeois rate of interst and uniform profit-rate; others (including Strumilin) thought that it would exert a bias against techical progress. Four years ago, however, there was issued, following an All-Union conference on the subject, an interim set of recommendations on the use of such coefficients; and this year a joint recommendation of the Research Institute of Gosplan and the Economics Institute of the Academy has been published, embodying a set of 'standard methods' *(tipovaia metodika)* for use in making such decisions at all levels down to the industrial enterprise.

This coefficient expresses the saving in prime cost (of producing a given output) which results from a given increase of investment (e. g. in more expensive and capital intensive eqiupment) as a ratio to this increased investment. A standard minimum coefficient is set, and any investment project that does not reach it will be rejected from the planning agenda. Actually no uniform value for the coefficient is lais down in the recently published ''standard methods'': merely limits within which it is suggested that branches of industry should fix a standard coefficient (these are between .15 and .3 for industry, with a lower figure of .1, or a recoupment period of ten years, for transport and power-production). The coefficient is also usable as a discount-factor to relate expenditure at different dates; and its use, alternatively, to construct an accounting cost-price is also suggested (a suggestion which I believe originated with Professor V. V. Novozhilov,[1]) one of the Leningrad pioneers of the linear-programming approach according to the Kantorovitch-method). Thus, if we write C for the prime cost of output under a given method of production, K for the value of the invested capital and r for the standard coefficient of effectiveness, then this cost price can be written as $rK + C$, and the method of production be chosen for which this cost-price is a minimum.

The retail market for consumer goods, is of course, a real market, and the prices on it have to be equilibrium prices (i. e. achieving an equilibrium or balance between current demand and available supply) if there are not to be queues and abnormal depletion (or alternatively accumulation) of stocks. This does not mean that these prices are changes at frequent intervals. They are now mostly controlled[2]) according to price-lists or price-limits drawn up by special price-fixing commisions at the level of the Republic Governments or else locally in the varicus regions; and these lists are apt to be altered only at intervals unless very marked discrepancy or anomaly becomes apparent. Thus quite short-period variations in demand have an effect usually on stocks rather than on prices. During the successive price-reductions of the 50's, however (which in the earlier half of the decade were apt to occur at regular annual intervals), there came to be a rough adjustment of the levels of individual prices to the prevailing demand situation for individual commodities. To begin with, there was what is now admitted to have been a too-rigid tendency to apply percentage reductions uniformly over a broad commodity-group. Resulting disequilibria in the market for certain goods (runs on some lines and resulting stock depletion and non-availability) forced an abandonment of this bureaucratic attitude in later price-reductions and a more careful adjustment of particular prices to the particular situation, with emphasis on the need for detailed market reasearch.

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[1]) See his contribution to *Primenenie Matematiki v Ekonomicheskikh Issledovaniakh*, ed. V. S. Nemchinov, Moscow 1959, pp. 42—213.

[2]) Some things of wide consumption including basic foodstuffs are still covered by central price-lists at an All-Union level.

What is known as the "wholesale price" *(optovaia tsena)* at the industrial level is, however, unrelated to the retail price, and is, in fact, a cost-price, based in familiar fashion upon "planned cost" with the addition of a small profit margin ("planned profit"). This planned "cost" consists essentially of prime costs, although it includes an amortisation charge to cover depreciation of equipment. The same applies to products of both sectors of industry, and in the case of Group A (producers' goods) this constitute the actual transfer price at which goods change hands between enterprises and at which they enter into the cost of the using enterprise. This is the "dual price-system" as it has grown up during and since the 1930's, which is defended mainly on the grounds of *khozraschot:* that the pre-fixing of selling-prices on the basis of the estimated cost of producing the planned output gives a maximum incentive to efficiency by the producing industry, since the industry (or individual enterprises within it) can only realise a profit *above* the planned profit by reducing *actual* cost below planned cost (and enterprises are allowed to retain a substantial proportion of any "above-plan profit"). The prices paid to individual enterprises within an industrial branch are usually varied where there exist appreciable differences in the "planned costs" of output for different enterprises (e. g. owing to differences in technical equipment, in type of product, or in natural situation in the case of an extractive industry); the selling-price at the level of the sales-department *(sbyt)* of the branch of industry as a whole being arrived at as an average of the prices set for the constituent enterprises. In the case of consumer goods the difference between the two price levels — between the retail price (less distributive cost *plus* planned profit-margin to distributive organs) and the industrial wholesale price — is bridged by the turnover tax, which diverts this difference directly into the Budget instead of allowing it to accrue as profit to industry. In the case of producer goods it is only exceptionally that the transfer price charged to users is built op by the addition of a turnover tax to the sale-price at the industry level (examples are oil and electricity which as low-cost sources of fuel and power are built up to the level of coal as the high-cost source in this group of substitutes). There is a tendency elsewhere for selling prices of fairly close substitutes to be closely related in this way; and in the case of different grades of a commodity for the prices of the more favoured grades to be raised by more than their cost warrants, usually on the ground that these tend to be in "deficit supply" (this applies, for example, to "deficit steels").

Formerly the turnover tax on consumer goods was generally set at fixed rates for individual items, or rather for *groups* of items as it inevitably had to be. With the more careful attention to individual retail price differences which I have mentioned this had the disadvantage either of imposing undesirable rigidity on prices of items within a particular tax-group, or else (if retail prices of items were flexibly fixed) of imposing on the industry a variety of profit-margins for different items. One of the perennial planning-difficulties has been with the so-called "fulfilment of the assortment plan" — of the output plan as regards quality and range of varieties; enterprises having a tendency to concentrate on lines or varieties yielding the higher profit-margins or else on those most easy to produce and hence most advantageous for fulfilling the output-target in quantitative terms. To remove one of the biassing influences, there has accordingly been a move towards equalising the industrial profit-margin on items that are near-alternatives; and this has led to an interesting change of treatment of turnover tax. In consumer goods industries this now tends to be treated as whatever happens to be the difference in any particular case between the retail price (less distributive-margin) and the industrial wholesale price, instead of being levied at fixed rates. Starting on the eve of the war in the textile industry, this was later extended to most of the output of the food and light industries and seems on the way to becoming a general practice (though apparently the Ministry of Finance do not much like it, for control and administrative reasons.)

There are some who favour relating industrial wholesale price-differences to retail price-differences to the extent of widening industrial profit-margins on specially scarce goods or lines or varieties. I rather suspect that on occations the profit-margin may be widened (at least temporarily) to give an incentive to enterprises to produce more of a scarce line (e. g. in the case of new products and designs or special quality). But if so, this device is adopted rather sparingly; presumably because it is regarded as conflicting with the aims of *khozraschot.*

Regarding more long-term changes in the relative outputs of different consumer goods, involving changes in relative productive capacities of industries or of specialised enterprises within them, there is, of course, an obvious index for guiding such shifts available in the comparative rates of turnover tax on different goods expressed in each case as a ratio to their production cost (but the latter would need to be interpreted as Novozhilov's type of cost-price, not as prime cost only). In Poland, apparently, this kind of index for changing relative outputs has been adopted, in principle at least. But again, I know of no evidence that in the Soviet Union the problems is consciously regarded in this way. At the same time one cannot help thinking that long-term adjustments of supply are influenced by some such considerations as this, if only roughly and approximately. It seems only common-sense (particulary during a period when price-reductions have been frequent) to regard the gap between the retail price and the cost of a good as a measure of its shortness-of-supply, and to give investment-priority, other things being equal (including the costliness of new equipment), to the production of those things that are most clearly in short-supply.

Evidently, when more attention by producers to demand and the adaption of production more closely to consumers' wants are spoken of, what is mainly thought of as the index of demand is the pattern of orders coming from retailers. (There has been criticism in the past of industry adopting a take-it-or-leave-it attitude to distributors and supplying what it chooses to the latter instead of supplying what they ask for). In turn retailers presumably base their orders on comparative rates of stock-turnover of different goods, or in the case of scarce lines on what consumers ask for. Up to a point this may be a good-enough index. But the danger is that it may merely register the degree to which individual *prices* are *out of equilibrium* (i. e. with the supply-demand situation of individual goods), and not in the relevant sense the ''real'' scarcities of the goods in question. (If prices were everywhere 'perfectly'' adjusted to demand, it could be prices which adjusted demand everywhere to the available supplies, without bringing about any adjustment of the latter to the former).

I have not left myself time to say anything about the discussions on price-policy of the past few years among Soviet economists, and their possible repercussions on the future. All I can say briefly is that this discussion har largely been concerned with two main topics: firstly the question of the ''dual price-level'' for the two sectors, and whether the transfer-prices of producer goods ought not to include, in addition to ''planned cost'' as at present assesed, a proportional share of the ''surplus product of society'' as represented at present mainly by the turnover tax; secondly the question of whether, if there is to be a general price-reform, the guiding principle of price fixation should not be ''prices of production'' (in the Marxian sense) rather that ''values''. Advocates of the second type of change argue that this interpretation is consistent with the use of an effectiveness-coefficient as investment-criterion, and moreover that to fix prices in any other way may introduce a distortion into such coefficients (affecting, e. g., the relative investment-cost of projects using different constructional materials). Advocates of a uniform price-level for the two sectors argue that the low transfer-price of producer goods encourages wasteful use of equipment etc. and inadequate attention to its repair and maintemance.

At present these are still matters of keen controversy and no early agreement about them seems likely. If one is to hazard a guess, one might say, I think, that there is more likelihood in the near future of the use of *accounting* prices (e. g. for calculating investment-decisions) based on novel principles such as those of Novozhilov and Kantorovitch (already there is talk of using "price correctives" in particular cases for accounting purpose) than of any radical change in the basis of *actual* prices. Whether in the course of time widespread use of and acclimatisation to the former will bring about corresponding changes in the latter can be no more at present than a matter for speculation.

DISCUSSION

Observations were made by Mr. Knud Erik Svendsen, Mr. Leif Johansen, Mr. Michael Kaser, Dr. Rolf Krengel, Mr. Torben Grage and the lecturer.

Regarding long term planning of the production of consumer goods some comments were made on the lecturer's suggestion that an obvious index for guiding changes in production is available in the comparative rates of turnover tax on different goods expressed in each case as a ratio to their production costs. One speaker raised the question whether the size of the relative turnover tax might be an indicator, and eventually a sound indicator of investment priorities. He said that recently some research had been done in the Soviet Union to find out the future consumption pattern, for instance for the year 1975. The matter had been discussed without taking into consideration the existing turnover tax on the various goods. Different figures based on medical research and other studies, had been fixed for what was called a rational consumption per head for some important goods. These levels of rational consumption were different for different regions of the Soviet Union. The speaker said that if this was to be considered a real rational consumption distribution, the conclusion should be that the funds for research, investments etc. had to be distributed in a manner that would promote production of those goods which are scarce in proportion to the fixed norms. This distribution of investments might differ considerably from the distribution resulting from the practice suggested by the lecturer.

In this connection observations were made as to the possibility of reaching a rational and sound distribution of investments by use of the two methods. It was mentioned that application of what may be called "the rational comsumption method" would of cource require having a large amount of producer's or planners' sovereignty, while "the turnover tax method" would imply taking more directly into account consumers' preferences, which in a way are reflected in the rate of turnover tax. However both methods might have advantages as well as disadvantages.

Another comment concerned the revisions or adjustments of plans during the iteration procedure, when plans are passing from the Gosplan level through different lower stages down to individual enterprises and back again along the same route. The question was raised whether the revisions only amount to revisions of quantities of production or whether there also take place adjustments of the coefficients applied at different stages, for instance the coefficient expressing the requirements for raw materials and labour. It was suggested that if the coefficients are under revision at different stages, this iteration procedure may be a very useful one, but if the coefficients are kept fixed all the time (that is, if the revisions take place under the condition of fixed coefficients) then it might have been possible to do much of the adjustment work on a higher level without this passing from the top to the bottom and up again.

Some of the speakers touched the question whether economic planning is more difficult in a highly industrialized conutry than in an economically backward one. Opinions differed, and so they did when discussion touched the applicability of mathematical methods to planning.

NOTES ON THE ECONOMIC RELATIONS BETWEEN THE EAST EUROPEAN COUNTRIES

By *Knud Erik Svendsen*[1])

Fundamental facts.

The last years have witnessed a great expansion in the value of the trade between the East European countries. At the same time there has been a growing concern with what is called the international socialist division of labour.

Despite the expansion—also in the East-West trade—the total foreign trade of the Soviet Union and the seven East European People's Democracies is still comparatively low. In the professional press this is expressed in the way that the socialist world system, i. e. including the Asian communist countries, covers around $^1/_3$ of the world industrial production, while it only covers 8 pct. of total world foreign trade. More refined statistical concepts could of course be used (if the existed) but in any case it will be clear that the foreign trade of the socialist countries is very low for the area as a whole.

Between the countries are great differences: at the one end you have the Soviet Union where the share of international trade in its national income has been estimated to be around 3 per cent. In the other end you have countries like Eastern Germany, Czechoslovakia, Poland, and Hungary, where the share is ranging from 7 to 25 per cent, compared with e. g. 18 per cent in Western Germany.

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[1]) The Royal Library, Copenhagen.

To complete the demonstration of this fundamental fact the ECE in Geneve has calculated that the average annual per capita turnover of visible trade in Eastern Europe remains far below that of the Western European countries—some $ 120, compared with an average of $ 280 for the member countries of the OEEC.

The eastern market, i. e. the Soviet Union and the European people's democracies, constitutes on the other hand—seen from the viewpoint of the size of population—a market which equals a little more than the nations under the OEEC, or a little less than the USA together with the six states under the EEC. The last comparison is perhaps most relevant, because it is important to realize the special structure of the market. On this market—if it can be called a market, what we are going to discuss later—one big nation with more than 200 million people makes trade with 7 relatively small nations with 95 million souls.

These nations further are different in their level of development, indeed very different. The national income statistics not yet in a perfect state, the Polish and Soviet economists often illustrate this difference in the level of industrial production per head, e. g. these Polish figures for 1957[1]:

Bulgaria	RPR	Hungary	Poland	DDR	CSSR	USSR
45	55	80	100	160	180	120

At the same time these states are very differently endowed with ressources.

Some of them—and that is the most developed—are very dependent on imports of raw materials, especially DDR and Hungary; one of the nations has practically all what it needs, and further has an internal market of a size which can guarantee an optimal size of enterprises in all fields. This country is, of course, the Soviet Union.

This fact has put its mark on the commodity structure of the regional trade of these countries. The Soviet Union constitutes the main supplier of raw materials and at the same time a large market for the finished investment goods of these countries. More than half of the imports to CSSR and Hungary consists of raw materials and fuels; for Poland with its coal it is a little less than the half.

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[1] Marian Kaminski, Wyrownywanie poziomow. *Polityka* nr. 28, 11.7.59. The figure for the USSR is estimated by KES.

The final fundamental fact to be mentioned in this introduction is the high share of the interregional trade in the total foreign trade of the countries. This east trade, including the communist states in Asia, covers around 70 per cent of the exports and imports of each of the countries, for Poland a little less.

These were some basic facts in—I apologize—basic English.

Recent history of economic cooperation.

After this I shall give a short history of the form and organization of the economic relations between the countries. This will be the history of the coordinating economic organization for the area and of the bilateral arrangements between the countries, which to a larger and larger extent are coordinated by this common organ, the Council of Mutual Economic Assistance (CMEA), sometimes called Comecon.[1])

This organization was formed in 1949 with the Soviet Union and the European people's democracies as members; the allied Asian states have in the whole period only participated as observers. Until 1954 the council showed a low activity. In the first years after the war there had been the difficult reconstruction period, after that came the first development plans with strong autarcic tendencies. The litterature and official statements, a. o. by Hrustsjov, have complained of these attempts to copy the USSR, e. g. in Hungary, in developing all branches of heavy industry.

What could be called the theoretical symbol of this period, the Soviet textbook in political economy, called foreign trade a supplementary help, and did not regard it as a regular and valuable feature of economic development

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[1]) F. L. Pryor, Forms of economic co-operation in the European communist bloc: A survey. *Soviet Studies*, October 1959. G. Gräbig, Internationale Arbeitsteilung und Aussenhandel im sozialistischen Weltsystem. Berlin 1960. Karl Morgenstern, Zu einigen Fragen der sozialistischen internationalen Arbeitsteilung. *Einheit* nr. 4, 1960. Further references may be found in: Knud Erik Svendsen, A guide to translations of economic litterature from the Soviet Union and East Europe. *Kyklos* nr. 4, 1960.

The trade between the countries in this period was extremely low. But already in this period of the first plans was founded one of the most important activities of the council, the exchange of technical and scientific information. The exchange—in principle without cost for the countries receiving blueprints for machines, whole factories etc.—has since the beginning been expanded very much. Today a large part of the research work in these countries is made according to common agreements, and thousands of foreign students have been educated in the Soviet Union and other countries in the area.

This pooling of technical knowledge is difficult to measure in statistics, but is perhaps untill now the clearest manifestation of the fact that the cooperation takes place between planned economies, where the economy is based on different forms of social ownership, which excludes the secrecy which accompanies a system of private business. In this field—which according to the newest growth investigations in Western countries is one of the most important growth factors—the area is perhaps closer to an integration, if I may use this word, than any other group of nations in the world.

But back to history: 1954—56 became a kind of a turning period for the council. It now took up the coordination of the development plans of the member countries, first of all by working out some balances of the need for and production of some important goods and raw materials in the whole area during the first synchronized five year plans for 1956—60.

Further the council in 1956 set up the first permanent commissions for several branches, the number of which today is 18, including a general economic commission. These commissions have their seats in the different capitals, e. g. the coal commission in Warsaw, the agricultural commission in Sofia, the machine commission in Prague etc. Their task is to work out recommendations for the specialization of production in the region.

The commissions have cut the number of types of machines and metal products, and they have divided the types between the countries. One country is only building smaller ships, another middle sized ships and still another the large ones. DDR specializes in chemical equipment, RPR in oil refinery outfits etc. The detailed information about these specialization plans you may find in the excellent publications from the ECE.[1])

This specialization drive means that the countries bind themselves to play a certain role in the region. It is an expression of what is called the international socialist division of labour. As the specialization grows, the inter-regional trade must grow too. In fact, since 1956 this trade has expanded very much, but as mentioned it still is in all respects very low.

Many complaints of the slow progress of this specialization work have also been heard recently, especially in the field of the machine industry. Difficult problems are included in such a work, based on a cooperation between economists and technicians. As we shall see later the theory of international economics for planned economies is new and certainly underdeveloped. But despite these and other difficulties it must be expected that the extent of this planned specialization will grow in the coming years. It is to the advantage of mass production, conditioned by a division of labour between the small markets of the people's democracies, that the leading political personalities return again and again when they talk about the economic cooperation in the region.

Since the formation of the standing commissions this work to develop the specialization has been in constant progress. The efforts to coordinate the plans for 1956—60, primitive as they had to be in this opening round, were however, vasted to a certain degree by the economic effects of the events in 1956.

The council therefore in 1957 and 1958 decided to elaborate the basis for the coordination of the perspective plans to 1975, a long term period which on the latest council meeting in the end of July was extended to 1980.

In the last years the council has devoted much time to solve the raw material and energy situation of the region. Some quite serious disproportions between the expansion of the sectors and the manufacturing industries are felt. Large schemes with common investments

[1]) Economic Survey of Europe in 1957, in 1958, in 1959. Geneva 1958, 1959, and 1960. "Foreign trade and economic development in Eastern Europe and the Soviet Union," *Economic Bulletin for Europe*, Vol. 11, No. 1, Geneva, June 1959.

between the countries are being carried out. Among the most outstanding efforts you also find the plans to connect the electric energy system of the southern people's democracies with the south-west system of the Soviet Union. Plans to join Poland to another Soviet system also exists. To facilitate the deliveries of oil from the Soviet oil fields projects for a pipe line across the European part of the USSR with a northern and a southern branch in the people's democracies were also dreawn up. The northern branch may one day be of interest to the Scandinavian countries.

Finally, on its meeting in July 1960 the Council set up a new commision for atomic energy.

In these days of economic communities and free trade areas you may ask about the formal character of the CMEA. It appears from the recently published statute, where it is stressed repeatedly that it is not a supranational body. The council can make recommendations to its members, but the countries decide themselves, if they will follow these recommendations or not.

The evidence up till now seems to verify this principle to a high degree. Of course the question is a complicated one, but if generalizations must be made, it must be said that the states in respect to their plans are too sovereign and not too much subordinated to a common will, or if you like, orders from the biggest power in the region.

It is not correct to say—as it is sometimes done—that the council works out one single plan for the area. One Soviet economist writes about this: "Of course it is not like that." But another Soviet economist more carefully writes: "It is not the case for the moment." Each country constitutes a single economic unit with its own plan, its own currency, its own price and wage system etc.

This fact that we consider cooperation between single states is simply the main problem concerning the economic relations in the area. The fact is demonstrated by the bilateral character of the trade. At the beginning of the cooperation it was even based on short term agreements of one year; in the first half of 1960 treaties up to 1965 between practically all countries two and two have been set up.

The trade takes place on a clearing basis, until recently on a very narrow basis, i. e. after the 1st of January the accounts were made and the deficits should be paid off in goods before trade could continue. Now there exists credits to a certain limit.[1]

It should not be necessary to explain the disadvantages of this. In fact a resolution of 27th July on multilateral trade had been passed by the council, but this resolution has not been made effective. In 1960 articles in journals in DDR and Poland have been pressing hard for a solution of this question. It should be added that a future multilateral arrangement between the Eastern countries does not automatically include the Western countries.

As the exchange takes place between single states the problem of the prices in this trade turns up by itself. One element of this is that each state as an economic unit considers its own gain in the trade; the prices cannot be fixed arbitrarily. The effects of the prices have to be taken into consideration and this phenomenon is covered by the expression in these countries, that the "law of value" operates in their international trade.

Most of the discussions about foreign economics have in the people's democracies in fact turned around different price questions, while this problem has not received the same attention in the USSR. Two specific questions have been discussed:

1. the determination of an optimal export structure for a given state (the socalled export efficiency question);
2. the determination of the international prices on the socialist world market.

The export efficiency of a single state.

When the economists in a people's democracy calculates different indices of export efficiency they seek the answer to this question: if we have to obtain a certain amount of foreign currency to cover a given import, which goods will it be most rational to export, if we take the price relations on the foreign market as given?

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[1] F. Bystrov, Organizacija mezdunarodnych rascetov socialisticeskich stran. *Voprosy ekonomiki* nr. 2, 1960.

This problem has been discussed eagerly in Hungary since 1954, and in Czechoslovakia, DDR and Poland in the years after. A special conference with participation of specialists from these countries was held in Prague in December 1957 where professor V. Cerniansky made a report on calculation of indices of efficiency of export.¹)

The character of the problem shows its theoretical limitations. You can only build on the assumption of a given total import and a given import structure when the import is on a level, where you may assume that it consists of goods which your country has to import in any case, f. i. essential raw materials. Only very recently there have in Poland been published contributions to a discussion about import efficiency.²)

The proposed definitions of indices of export efficiency are very different both in details and principles. The calculations of such coefficients have to be simple as they shall be used in the operations by the centralized foreign trade organization in the country. No investigations based on a more advanced use of mathematics and computers have so far been published.

Here, it will only be possible to sketch the main problems involved.

Of course the economists try in one way or another to compare the amount of foreign currency gained by the export of a certain commodity with the costs of producing this good for export.

Poland has for instance been working with an "effective net foreign exchange rate," which is calculated as the ratio of the costs in Zlotys (net of imported materials) to the obtained price in $ (net of imported materials). This ratio calculated for different commodities shows what it costs to obtain 1 dollar when you export these

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¹) The book "Czechoslovak Economic Papers," published by the Academy of Sciences, Prague 1959, contains two articles on the subject: V. Kaigl, International division of labour in the world socialist system. V. Cerniansky, The problems of economic efficiency of foreign trade. Very many articles can be found the East German journals *Wirtschaftswissenschaft*, and *Der Aussenhandel*. From the former may be mentioned in No. 3, 1958: R. Thiele, Zur volkswirtschaftlichen Rentabilität des Aussenhandels, and R. Brauer, Zur Frage des volkswirtschaftlichen Nutzeffect des Aussenhandels. From *Der Aussenhandel* can be mentioned: V. Cerniansky, Die Preisbasis auf dem sozialistischen Weltmarkt (no. 4/5, 1958) and I. Vajda, Einige Bemerkungen über die Preisbasis auf dem sozialistischen Weltmarkt (No. 22, 1958).

²) I have not been able to use a new Polish book on this subject: A. Rolow, *Rachunek ekonomiczny w handlu zagranicznym.* Warszawa 1960.

commodities. If the trade organization has a limit for this price on a dollar, it is then able to operate.

Other countries use other formulas, but the difficulty involved is the same: what are the real costs of producing the different goods? The national price system is of no use here, as it does not—for reasons which Maurice Dobb will explain us in greater detail later—give a perfect picture of the cost relations.

In practice this has been treated as a question about how to correct the national prices to make them valid for foreign trade comparisons. The main question still is how to add a mark-up on wage and material costs plus amortizations to cover net investment. Regardless of theoretical discussions of this point some of the countries have in practice shown that they understand the validity of the question: when they shall choose for export between two commodities with the same total costs (wages, material and amortization) and with the same foreign price, they choose the commodity which involves the smallest investment for the reason that the investment funds are limited and strongly needed to sustain a high growth rate.

The formulas developed by professor Cerniansky do not account for this which has provoked a Chinese contribution to the discussion according to which the net accumulation must be added as an average ratio to the wage costs.1)

As it will be seen from this summary these discussions about indices are theoretically based on the theory of comparative costs, and therefore accompanied by the weaknesses of this theory. It may be of some use in the short run but it does not seem very reasonable to plan a country's export in the long run on this basis, especially in a region characterized by a rapid development and important changes in the composition of industrial production.

Prices on the world socialist market.

The assumption of given prices is only possible in the trade of the East European countries on the capitalist market. When they

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1) Ssü Shön-djün and Schan Shu-ssu, Die Rentabilität des Aussenhandels. *Der Aussenhandel* 1/12, 1959.

make trade between themselves they have to agree on the price relations. No market to settle the prices in trade between the national trade organizations exists.

The official principle has been to use the world prices, i. e. the prices on the world capitalist market, with different modifications and corrections. Short run price changes are not followed; when the Korea boom came it was official policy to use the price relations before the boom, and these stop prices were in principle the price basis until 1958, when it was decided to pass to the 1957 world prices. It has been stated that the principle now is to use the average prices from the preceding year, but many hints indicate that the 1957 prices still provide the main price basis.

A large discussion of this problem has taken place in the last years and still continues. Two schools are in conflict: the one defends the world capitalist prices, the other school is critizing this price basis and argues for the formation of a specific price system on the world socialist market.

The defenders of the existing method maintain that the world capitalist prices give the best picture of the productivity relations in the world today, and that the socialist countries have to follow these objective relations between the costs of producing different commodities. They further argue that different price relations outside and inside the socialist region may lead to "escape tendencies", i. e. that some of the socialist countries may prefer to trade with the Western countries if its terms of trade are better in this direction. A further point in the polemics against the attacks on the world capitalist prices is that it is most convenient to use these prices; the critics have never explained how they in practice will construct other prices. Finally, it can be mentioned that a Polish source has pointed to the "psychological" advantages of the world prices: they may better be considered as "non-political" prices by the partners in the internal socialist trade; any prices settled in negotiations between these partners cannot claim to be non-partisan in the same degree.

These were the main arguments *pro* the use of the world capitalist prices as fas as I have been able to extract them from the mass of litterature. We may then proceed to the arguments *contra*.

A practical argument against the world capitalist prices is, that except for a few commodities, e. g. raw materials, there exist no clear and indisputable prices. In fact, a large investigation work is carried out in the USSR to explore the prices of thousands of goods, and many of the results are published in large volumes, but for most differentiated goods there exist no exact price and the price information about similar goods may only serve as an aid in the final price decision through negotiations between the political authorities of the socialist states. When this is the case, it is misleading to believe that the final prices are objective in the sence that they do not contain any political element. In all the discussions about the necessary *corrections* of the world capitalist prices you find this political influence on the price.

Further, the critics argue, the capitalist prices do not reflect the relative production costs; they contain different elements of rent and monopoly profits and are also under political influence. And it is not an easy task to correct for these deviations. But, even if the capitalist prices did express the relative real costs, these relations would be the relations of costs in the capitalist region of the world, and it would be strange if these relative costs correspond to the cost relations in the socialist region, considered as a whole. If the internal socialist trade shall promote the development of the region *as a region* the price system must promote this and cannot be copied from the trade in another part of the world.

As far as I am able to interprete the discussion this is the main problem, even if it has not yet to my knowledge been stated in this explicit form. But before adding some thoughts to this question I should like to comment on the calculations by *Horst Mendershausen* on the gains of the USSR in its trade with the East European countries.[1]

According to these calculations the Soviet Union has paid lower prices for the commodities from Eastern Europe than the prices obtained for these goods in the Western world and at the same time charged higher prices on its export to Eastern Europe than to other markets. I am not going to discuss the validity of the statistics and the different calculation problems involved. A Norwegian economist has already done this.[1] I want to put forward some doubts about the value of such calculations, i. e. the more theoretical assumptions on which they build. For this purpose we may well assume that the calculations are correct from a mechanical viewpoint.

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[1] The latest calculations in: Horst Mendershausen, The terms of Soviet-Satellite trade: A broadened analysis. *Review of Economics and Statistics*, May 1960.

What Mendershausen does is to compare two sets of prices, taking the Western prices as his standard of comparison. The observed deviation from this standard is defined as a gain for the USSR and a loss for the East European countries. This way of thinking may be correct from a liberal free trade viewpoint, if the East European countries and the USSR could have made trade with the countries outside their region—of the volume they wanted and without changing the prices on the Western markets. I doubt that this assumption is realistic, in any case it disregards the political elements of the East-West trade. But—and this is more important—such a free trade assumption is out of place when you consider problems connected with the furthering of the cooperation *inside a certain region.* Efforts of this character do not intend trade on the same economic basis between countries *in* the region and outside the region. (A customs union also creates different commercial conditions between two countries in the union and two countries inside and outside the region).

From this viewpoint it is only possible to judge the price system on the international socialist market from its value in developing the optimal production structure in the socialist region. And this cannot be done with simple statistical methods. Take for instance the much discussed question of the relations between raw materials and finished goods. To discuss what is the "correct" price relation will be quite futile if you do not state what you want to obtain with this price relation. If you want to develop the raw material producing countries you must consider that their deteriorated terms of trade in the last years counteract this purpose. And if you wish a specific development in the socialist region, defined f. i. by localization of different industries, and growth rates in different countries belonging to the region, you may state an opinion about the price relations in the regional trade.

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[1] Jan Serck-Hansen, Prisforhold i sovjetisk utenrikshandel. Norsk Selskap for Sovjetstudier, *Østøkonomi*, september 1960.

However you define your goals, the work of definition will be political. Your goals may be of mainly economic character, as the two examples just mentioned, or they may be of a political character, as for instance to ensure a strategic localization of production or to further a quiet political development in all countries in the region. But only when you have made a catalogue of your goals you may state your opinion about the international prices.

Mendershausen makes no reflections of this kind, and therefore I think his calculations avoid the most interesting question. This does not mean that his conclusions have no importance, especially when you consider the distribution of "gains and losses" between the different states. They may—at least in the short run—explain the different "escape tendencies" in the different countries as mentioned above. And their way of thinking may play a psychological role in these countries and be used as support for claims for higher prices, e. g. on Polish coal to the USSR.

The significance of the prices to the regionalization of the socialist region has not to my knowledge been discussed in the countries themselves. And it must be said that not very much in the field of theoretical investigations of *planned* international integration has been done. The Council of Mutual Economic Assistance has published that it in November 1959 has begun to try to find methods to compare the absolute levels of productivity in the different countries. The results of this and statements on how these investigations shall be used have not yet been published.

It must be expected that the plans after 1965 will throw some light on these questions. Only one question in this field has been treated in the public discussion. With that I shall conclude my report.

The equalization of the different national levels.

On the 21st Congress of the Communist Party of the Soviet Union in the beginning of 1959 it was decided as a "thesis" to approximate the production levels of the countries.

I have already mentioned the great differences between the countries in 1957. What information do we find about the change of these differences in the last years? The same Polish source as above give the following picture of the level of industrial production per inhabitant (Poland = 100):

	Bulgaria	RPR	Hungary	Poland	DDR	CSSR
1950	40	55	80	100	155	210
1957	45	55	90	100	160	180

A Soviet economist[1], gives the following figures calculated by Gosplan (USSR = 100):

	Bulgaria	RPR	Poland	USSR
1950	35	46	77	100
1958	40	50	85	100

The general picture is that some approximation has taken place, For the coming years the prospects in this respect are perhaps not so good. The Polish source concludes from a review of the planned production increases and the expected population growth that 1965 will present the same differences in production level as 1957.

On this background it is understandable that especially Soviet economists have warned against taking the equalization "too mechanically." Without doubt this problem is serious from a political viewpoint.

It is expected that the general economic cooperation between the countries will promote the equalization process. But how it will do that needs further thoughts. A higher rate of foreign trade (at certain price relations) and an exchange of knowledge are important factors in this respect. When you however turn to international investments or "export of capital" you will find a relatively low activity, according to the statistics given by the ECE. It is this question, I finally shall give some attention.

The rather low amount of international investments mainly takes the form of direct investments in specific projects. DDR and CSSR invest in Polish coal, Hungary in Rumanian natural gas etc. Formally, such projects are owned by the state in which they are placed. The rate of interest is around 2 per cent, but it is possible that the payment also consists of certain guarantees for deliveries.

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[1]) O. Bogomolov, Mezdunarodnoe socialisticeskoe razdelenie truda. *Voprosy ekonomiki* nr. 1, 1960.

One may ask if this low level of international investments in the region is not influenced in some degree by the more ideological problems around the charging of a higher interest rate. The funds for investment in the region are scarce, and Asian and African countries also need their share. But a higher interest rate on Soviet and Czechoslovakian loans to other countries in Eastern Europe might call forth a higher amount of loans, as the loan would be a more open economic transaction for the creditor nation and still would be advantageous for the receiver. It is very well to stress the principle of 2 per cent interest, but perhaps it would be better for the economic development of the region to charge a higher interest on a larger amount of investments.

This international investment problem as well as the international price problem is closely connected with the corresponding national problems. And it may be expected that the progress made in the national discussions in these fields in the last years will influence the solution of the international problems.

There are clear indications that the authorities now understand that many growth reserves are hidden in the rather undeveloped international economics. Personally, I think ,that the extraordinary speed in the economic thinking in these countries in the last 2—3 years will bring new interesting results for the theory of foreign economics, especially concerning the hitherto uncultivated field of planned integration.

DISCUSSION

Various observations were made by Mr. Leif Johansen, Dr. Rolf Krengel, Mr. Torben Grage and the lecturer.

The question of prices was brought forward by one speaker. He thought that the conditions which theoretically should justify the use of world market prices in the trade between the East European countries did not seem to exist. The shortage of raw materials seemed to him to imply that those countries could not trade as much as they want at the prevailing world market prices. Regarding the figures, he thought they displayed a fairly regular pattern of levelling out the income per head between the East European countries, which was an official aim. This did not necessarily mean an equalization of industrial production per head. He felt that more could be obtained by extending trade in those countries, than by extending trade in the Western European area, partly because the former are planned economies.

Another comment concerned the Mendershausen studies of trade within the Eastern countries. According to these studies, Mendershausen has tried to prove that the Soviet Union exploits the other countries in the Eastern block. The speaker, however, did not agree with this opinion. The question of economic integration was mentioned by one speaker. He found there would still be a lot of differences concerning preferences, before the East European countries integrate and that the Soviet Union might be less interested in trading with the other Eastern block countries than vice versa.

In his final remarks, Mr. Svendsen agreed that if the situation were such that the East European countries could change their trade from the trade with the Soviet Union to a trade based on better prices with the Western countries, then the Mendershausen way of seeing the problem would be correct. But Mr. Svendsen found his assumptions as wrong as the other speakers had stated. He emphasized that it was not the question, if the Peoples Democracies can import from the Western area what they now import from the Soviet Union, but if they can export to the Western countries what they now export to the Soviet Union. One factor was the increasing standardizing of equipment with Soviet types.

Mr. Svendsen also raised the question of the rate of interest, and said, that if a higher rate is chosen, one will get a situation where the Soviet Union will be interested in exporting and the Peoples Democracies still will be interested in importing capital. On the other hand he did not believe the interestrate would be increased in the first years, because of the feelings involved in this question. In his opinion, the integration problem could be seen both from an economic and a political point of view and he was not able to reach an adequate conclusion. The details of how they discuss this problem is not known since most of the work, until now done by the Council of Mutual Economic Assistance, is not published. In some of the East European countries, he thought, they pressed for a multilateral payments agreement, and that there was need for a credit fund. These are, however, also questions of both technical and political character.

ECONOMIC PLANNING AND THE GROWTH PROBLEM IN DEVELOPING COUNTRIES

By *Ragnar Frisch*[1])

I must apologize for having very little to contribute to the special discussion on the economy and economics of the Soviet Union and the other East European countries. I am most definitely no expert on these questions, but it comforts me that these topics were treated at this seminar in such an excellent way by Mr. Dobb, Mr. Kaser, Mr. Svendsen and other experts. My own contribution will consist in discussing economic planning methodology in general, and in particular the form that is most appropriate in developing countries. What I have to say by way of introduction might perhaps appear to you to be philosophical rather than technical, but I hope you will agree that in the end it is very relevant to the practical problems of planning.

The ideas I want to bring before you are listed in brief outline on the first page of the paper that has been circulated.[2]) I will start by making a confession which may serve as an elaboration of the idea which is listed in point 2.

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[1]) University of Oslo.

[2]) The list of subjects referred to here, which was distributed to the participants in the seminar, was the following:

1. Three attitudes towards Soviet economics.
2. Discussing planning methodology in general. Not specific results.
3. The programming approach.
    - 3.1. Scientific and objective.
    - 3.2. In principle all-inclusive.
    - 3.3. The optimum way of thinking.
    - 3.4. The operational character. Quantification in practice.

4. The need for simplification.
    - 4.1. Limitation of data.

The ultimate purpose of progress is, in my opinion, something far beyond an increase in living standards. It is cultural, spiritual and moral and it is a training in the philosophy of helping others.

This basic wisdom is a heritage from the great Oriental and Middle East thinkers and sages of old. It has been passed down to us through the centuries and millennia in many different forms, but always with emphasis on the superiority of contemplation, serenity, goodness and duty as compared to the material desires. To quote but one example we find it typically expounded in the Indian Bhagavad-Gita, which is part of the immense epopee Mahabharata.

Bhagawad-Gita recites a metaphysical talk between the young prince Ardjouna and God before a big battle, God being disguised as one of Ardjouna's companions. Here we learn that whenever action is needed and unavoidable, it should not be motivated by a desire for pleasure, material advantages and domination over others, but should spring from goodness and a feeling of duty. Nothing should be considered as belonging to oneself. One should cherish a feeling of love for everybody, friends and enemies alike, and should wish the best for all creatures, men and animals. An emanation of this virtuous attitude we find in the famous saying of Mahatma Gandhi: "Infinite resistance to the wrong doing and infinite love for the wrong doer."

But superior to all action, even the most virtuous, are contemplation, serenity of mind, composure and inner tranquillity. Only through these states of mind is it possible to be delivered from the sham of the material world with its desires and pains.

4.2. Limited possibilities of statistical and technical processing.
4.3. Limited computational facilities.
4.4. Administrative problems. The human factor. Communication theory. The pyramidation problem.
Conclusion: Accepting simplification in a positive spirit. (Not defeatism).
5. Examples of pre-programming ways of thinking.
6. The channel model. An example of a macroeconomic programming model.
7. Technical computational problems.
Speed of calculation, store capacity, access time.
Different type of stores:
High speed memory (magnetic core)
Magnetic drums
Magnetic tape.

Such thoughts were not confined to cultivation in the exclusive circle of a few intellectuals. They penetrated deep into the thinking of the millions and influenced their behaviour and outlook in a most profound way.

It is a significant fact that this eternal wisdom has survived in the materially underdeveloped but culturally, artistically and spiritually highly mature countries of the Orient and the Middle East, but it has been almost completely forgotten in the over-complicated, industrialized countries of the West. It has been forgotten to a point where a faint gleam of the old wisdom, when it occurs, will appear to be a sensational "discovery" of something new. Much has for instance been written lately about the "discovery" that it is necessary to find a new guiding principle, a new *purpose*, in the economies of the extremely commercialized and developed countries. It has become more and more obvious that the increase in productive capacity in these countries no longer tends to serve the real and worthy *needs* of the population. To find an increasing outlet for such consumer goods as can be sold at a profit in a free market economy, it has become necessary to invent ever new needs that can be forced upon the public through high pressure salesmanship, inducements to buy on credit and a reckless exploitation of people's fear of appearing not to be able to afford what the "others" can.

Slum-clearing, improvement of general sanitation and health services, general education, a general dissipation of cultural values, improvements in old age pensions, social security in general and the hundred other worthy things that can only be realized through Government initiative, represent wants that certainly do not need to be invented. They are there, but their satisfaction has lagged behind and only very slowly has it followed the general economic progress. The reason for this is simply that it does not in a commercial sense pay to satisfy these wants. There is no profit motive behind them. It pays better dividends to use the productive resources of the nation for the creation of and the satisfaction of more and more crazy *commercializable* wants.

In this way the materially highly developed nations have been led more and more towards the extreme opposite of the ancient

Oriental and Middle East wisdom. Life in the most highly developed countries has become more and more hectic, more and more concentrated on how to get hold of the newest gadgets for pleasure and high pitch entertainment—and on how to find means of *paying the oldest bills* due.

It is no coincidence that this development towards inner restlessness and tension has taken place simultaneously with a cult of the noisy, the ugly and the insane in all forms of art. And also simultaneously with a frightening increase in juvenile and adult criminality and a wave of psychiatric ills.

Is this necessarily the price we have to pay for economic development? Do the materially underdeveloped countries have to go through this same cycle only to *rediscover* in the end the millenial truth which the ancient Oriental and Middle East thinkers and sages tried to teach us?

It would be defeatism to think that this is necessary. We *must* find a way to abolish poverty, illiteracy, malnutrition and ill health without losing the priceless heritage of old culture and old wisdom.

This is possible, but it takes a determinate policy to achieve it.

In the first place, the economic development must be *guided*. It cannot be left to itself. In the second place, we must always clearly recognize that material development has its real dangers. At every turn of the road we must watch carefully that nothing is done that can work counter to the ultimate purpose of progress: the cultural, the spiritual and the moral values.

To be concrete: it serves a higher ideal to give the population of a materially underdeveloped country an opportunity to eat more eggs and to stimulate its craving for harmonious art, meditation and high morale, than to furnish it with the latest gadgets for "enjoying" exciting entertainment.

Material development is necessary, indeed. Nobody with a beating heart can fail to be moved by the present state of affairs in materially underdeveloped countries. But it must always be remembered that economic development is only a means towards a higher goal.

This confession, obviously, is based on a judgement of ultimate values. And it should therefore, perhaps, be outside the realm of the objective scientist. But it has such a basic meaning for the whole work on economic development that I must be forgiven for stating my case clearly before I now turn to the strictly economic analysis.

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The smaller the part of the national income used for consumption, that is, the larger the part used for domestic investment or for exports, the easier it will be for the country to ensure later a rapid increase in the national income. It does not take much originality to understand that here is the crux of the problem for the materially underdeveloped countries. The living standards are so low that it is out of the question to press them even lower. It is therefore very difficult for such a country to start its upward move without foreign aid, in the form of either loans or gifts. To become more wealthy through its own efforts, a country has to start by *being* wealthy.

This raises an interesting philosophical question: why is it that some countries are to-day highly developed in the material sense and others underdeveloped? This question is precisely of the same sort as the question of the ultimate causes—genetical, biological and historical—of the fact that the earth has become inhabited by such and such differentiated species of plants and animals.

It may be an alluring intellectual exercise to ponder on this, but such studies would not seem to be of much use for the politician or scientist who is eager to help to overcome as quickly as possible the sufferings of man. Such a politician or scientist will have to concentrate on the more immediately relevant factors and on the practical problems.

In the materially underdeveloped countries that strive to achieve rapid economic progress one is nearly always confronted with the same pattern of economic difficulties and conflicting goals. To create employment and raise living standards as quickly as possible in a rapidly increasing population one starts more or less by force and active Government intervention all sorts of economic activities, improvements in agriculture, industrial developments in light industries as well as in heavy industries like steel, fertilizer, electricity production etc. Since all this activity means spending lots of money, an inflationary pressure emerges in the investment sector and there is a heavy drain on foreign resources. On the other hand, the investment activity increases purchasing power in the hands of the consumers. Social reforms such as redistribution of land tend in the same direction. People want more food, more clothes—and perhaps more children. Since most of the production that has been started does not immediately yield consumer goods, the inflationary pressure spreads to the consumption sector. To combat this latter form of inflationary process, one would have to redirect productive forces into consumer goods production. But this would retard final progress, a very unattractive alternative. And again there is the eternal conflict between high standards of living through high production per man-hour and the necessity of creating new jobs.

It is an easy matter for a conservative economist to raise his finger and warn the underdeveloped countries about all these difficulties, and to tell them that the economic history of the western countries over the past centuries teaches us that economic progress is a slow process and that therefore the underdeveloped countries must be patient and wait for slow improvement. This sort of "advice" is not very much to the point in the world of today with its new technologies and new ways of thinking. The picture is completely changed. We must think in a different, a truly progressive way.

In the more advanced countries of the West the problems are partly the same and partly different. For instance, here a new and special sort of inflationary spiral emerges which no country has been able to avoid. It works in booms and depressions alike. It is created by the fact that the price-wage fixation to a large extent takes place through collective bargaining or state organized negotiations between labour, industry and agriculture. The bargaining must take place in this form if a general economic warfare is to be avoided. But in such negotiations it is always easier to reach an agreement by raising some rates than by lowering some rates, and so necessarily the inflation goes on. And each party will blame the others for "contributing to inflation". So it seems that in whatever direction one looks, the situation is the same. By trying to solve one problem, one creates several new problems. The whole picture is bewildering and it seems hard to know precisely what course to follow.

Here is where economic programming comes in. If speed with safety is to be possible at all in the materially underdeveloped countries, and I would add even in the materially more advanced countries, it must be through a rational form of economic programming. This brings me to the third point on my list: The programming approach.

The programming approach as I would like to define it is very ambitious. It goes much beyond the technique of material balances so much in vogue in some of the eastern countries. True programming is much more difficult to apply than the method of material balances. At the present stage the prospects for a practical application of a true programming approach are perhaps best in the medium sized developing countries with at least a certain level of industrialization and a certain amount of statistics and a reasonably trained staff of statisticians. This type of country seems to be the most promising field of application of rational planning techniques at the present stage.¹)

I shall state briefly the main characteristics of the true programming approach to planning as I see it.

In the first place it is *scientific and objective.* It must be based on a clear cut logical scheme where in particular the number of

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¹) *Note added January 1961.* In the last year a very significant new development has taken place in the Soviet Union toward the application of more rational methods of economic planning, based on intensive statistics, econometrics and mathematics. In this respect a paper by Academician V. S. Nemchinov, Moscow: "Die Anwendung mathematischer Methoden in der Wirtschaftsforschung und Planung," *Sovjetwissenschaftliche Beiträge*, October 1960, is highly interesting. The following excerpts from his letter to me of 2 December 1960 is not only significant from the viewpoint of the trend in scientific economic planning, but is also indicative of the Soviet spirit of peaceful co-existence. He writes: "We are sure here, in the USSR, that application of mathematical methods in economic analysis and planning can be fruitfully developed under our conditions both on the microeconomic and macroeconomic level. This is why we are developing our research in a broad field embracing the whole volume of problems connected with these two groups of practical tasks, as well as all "intermediate" problems (e. g. regional problems, analysis of microregional interdependence etc.).

I believe that further exchange of views and information will be mutually useful, because it makes it possible not only to acquaint oneself with achievements of his foreign colleagues, but also to learn and better understand different points of view."

degrees of freedom in the reasoning emerges in a precise way. It is impossible to satisfy these requirements without formulating the analysis in terms of a precise theoretical model.

This scientific character of the analysis does not, of course, mean that it is independent of politically formulated goals. These goals do come into the picture, but only as data for the scientific programmer. They serve to define what in the programming terminology may be called the preference function. Sometimes these goals must be formulated *in very specific terms*, and this is perhaps one of the most important differences between the classical economic analysis and the modern programming approach. And the results of the analysis must be presented in such a way that they do not hinder political manoeuverability. The results must only be in the nature of advice, and they should be formulated in such a way that the responsible political authorities can see clearly how much it will cost in terms of the preference function if the authorities decide to depart from the advice for some political or humanitarian or other reasons that are not stated explicitly in the preference function.

Second, the economic programming model must be *all-inclusive* in the sense that all relevant features of the economy are included simultaneously, at least in an aggregated form. And all relevant alternatives must be included so far as choice of technology is concerned.

Third, the analysis must be formulated as a true *optimum problem*, i. e. it must be formulated in such a way that the results emerge as the best possible solution that is attainable under the given conditions. One of the most urgent needs in developing countries to-day is to accustom the authorities to think in optimum terms and not to let the decisions on investments projects and on other important aspects of the economy be based on ad hoc partial considerations, perhaps under the influence of pressure groups.

Whithout going into detail I may illustrate the programming formulation in a schematic way as follows.

Suppose we consider a number—perhaps a very great number—of variables, $x_1, x_2, \ldots, x_N$, describing the constellation of the economy. And suppose that a certain function of these variables, $f(x_1, x_2, \ldots, x_N)$, is taken as our *preference function*, i. e., a function which we want to maximize. It may perhaps be the rate of increase of national income over a given number of years or some other formulation of the goals. Further suppose that the structure of the economy is expressed in terms of certain *relations* between these various variables. Finally we must introduce certain *bounds* on these variables. This means that for each of the variables, say for no. i, we have prescribed a lower bound $\underline{x}_i$ and an upper bound $\bar{x}_i$ between which the variable x_i must lie, i. e.,

$$\underline{x}_i \leqq x_i \leqq \bar{x}_i.$$

If some of the variables are not bounded in this way we can consider this as the special case where either the lower bound $\underline{x}_i$ is minus infinity or the upper bound $\bar{x}_i$ is plus infinity (or both) for the variable in question.

The *selection* part of a programming problem will then be to find such values of the variables $x_1, x_2, \ldots, x_N$, as will maximize the preference function under the constraints expressed by the relations and the bounds. And the *implementation* part of the programming problem is to find ways and means of steering the economy in such a way that the desired constellation is achieved. Finally there is the *follow-up* problem which consists in checking and controlling the execution of the program.

This is a very brief indication of the logic of a programming problem. The analysis may be elaborated in different directions, for instance in the direction of what is called parametric programming. This means investigating how the solution will depend on changes in the various data, changes in the preference function, changes in the bounds etc. Or the analysis may be refined in the direction of introducing a stochastic element, that is to say the probability distribution of the data and of the solution, and so on. I shall not enter into these technicalities.

The programming analysis must be truly *operational* in the sense that the concepts and quantities involved actually have their counterparts in observable, statistically and technically and economically fairly well-defined phenomena in the economy, and are of such a nature that the results of the analysis can be taken as a guiding principle for *action* on the burning economic political issues. Sometimes this means that the concepts must be specified in considerable detail. And a number of detailed practical questions must be settled regarding the way in which the quantities involved in the theoretical model are to be measured.

These desiderata constitute an ideal which we should strive to follow, but which it is never possible to realize completely. In practice we face the need for simplification. There are several reasons for this.

First of all, the data may not be so abundant and precise as the statistical, the technical and the economic experts would like. You know that the appetite of these people for better and more reliable data is insatiable and frequently one has to put up with something less perfect.

Second, it is not only a matter of getting raw data but also of processing them in such a way that they become usable for the analytical purpose one has in mind. This processing is an immense practical task that demands great understanding, accuracy and feeling of responsibility on the part of the large staff that takes part in the work. It is also a question of rational organization of the work. This implies the use of modern data processing machines and—equally important—a wise organization of the human factor involved. I have a certain amount of experience in organizing work of this sort and find that it is quite a task to impress on associates and assistants the need for precision and responsibility in handling such an enormous amount of data, and to apply foolproof checks in all directions where this is possible.

Third, there is the question of limited computational facilities. The programming problem in its ideal formulation with a considerable number of break-downs and a truly dynamic model will be so big that it is unmanageable even by means of the very large modern electronic computers. So, also on this score, it will be necessary to look for simplifications and aggregations. Not to mention the fact that a thorough solution will be very costly, because it will always be necessary to run a series of tentative solutions and, in the course of these tentative solutions, to modify some of the conditions or some of the assumptions made in the analysis. Our experiences so far in solving mathematical programming problems of this kind tend to show that we have to rely heavily on my multiplex method[1]). I don't see how our problems could have been handled by any other method except at a larger cost.

Fourth, there is the human factor involved in carrying out and following up and checking the execution of the plan. The human factor is just as important in this phase of the programming as in the processing of the data. Not only downright corruption, but also a lack of understanding and the general shortcoming of humans will put definite limits to what can be achieved. Sometimes it will be necessary to compromise between what is administratively feasible and what would have been an ideal optimal programming solution if more adequate administrative possibilities had been available. Here we meet the typical problems that are considered in modern abstract communication theory and in the study of imperfections in the giving and receiving of orders. This is what, in an abstract sense, is designated under the name of noise in information channels.

In this connection should be mentioned what we may term the *pyramidation* problem, that is the general problem of the extent to which it is possible to decentralize the decisions and the optimum number of levels on which the decision making machinery is to be organized.

All these difficulties will make it necessary to accept considerable simplifications in what one would like to see as the ideal programming study. These simplifications should be accepted in a positive spirit. There should be no feeling of defeatism. Even with a considerably simplified decisional programming model it is likely that one will be able to elaborate a framework for macroeconomic decisions which gives better results than what could have been obtained by more or less haphazard, ad hoc and partial decisions.

With this definition of a true programming analysis in mind it may be useful to survey rapidly some types of analyses that are much in vogue but are not adequate for a true programming analysis. They are rather what I would call examples of *pre-program-*

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[1]) The method is described in several memoranda from the University Institute of Economics, Oslo, and in *SANKHYA*, *The Indian Journal of Statistics*, 1957.

ming ways of thinking. This survey is what is listed as point 5 in the synopsis.

First let me mention the great emphasis that is often put on such a concept as the savings rate, i. e. the part of private income that is not used for consumption. Frequently one tries to estimate this rate on the basis of past data and *before* the decision on investment and other decisions on economic policy are taken, and then, afterwards to use this estimate of the savings rate as basis for decisions on investment and on other aspects of the economy. This way of proceeding is to put the cart before the horse. The savings rate is not a datum for economic policy decision in a true programming sense, but it is itself a consequence—one might almost say an incidental consequence—of the programming decisions. In a developing country where it is the explicit purpose of the authorities to change the past course of affairs and transform the economy from a stagnant one into a truly progressive one, it has little meaning to estimate a priori the savings rate by means of data that have emerged under a different economic policy and perhaps different economic institutions. The data from which to start in a true programming analysis must go much deeper down into the technological and behaviouristic structure of the economy. For this reason I have always been rather sceptical about the usefulness of such an extremely simple analytical tool as the Harrod-Domar growth model. Models of this type may have a certain descriptive value when applied to an economy that is left more or less to itself under a régime of a rather free market economy, although even for this purpose they are too aggregated to have much explicative power. A growth model with sectorial breakdowns and other refinements which gives it much more explicative power has recently been given to us by Mr. Leif Johansen[1]), who is participating in this seminar. But even his model is more in the nature of a specific growth model and does not have the features which I think essential in a true programming analysis.

In this connection should be mentioned also another special type of fallacy which is frequently encountered in economic planning work, namely to put up as a target a more or less arbitrary rate of

[1]) *A Multi-Sectoral Study of Economic Growth*, Amsterdam, 1960.

development of national income, and then try to find out what consequences can be deduced from such an assumption. Such a starting point for the analysis has no logical basis and owes its popularity, I think, only to its simplicity. (To introduce the national income development rate in the preference function is an entirely different matter. In this case optimum calculations are made).

Indeed, in the first place it is frequently not established that the postulated rate of development is *possible* at all under the given technical, behaviouristic and political conditions. And even if it were, one has no guarantee that it is the rate that corresponds *best* to the goal that the authorities would like to reach if it were possible. For instance, why was not the assumed rate put 10 or 20 or even 50 per cent higher? Only a true programming analysis can answer this question.

In the second place, even if the rate is given, it is in no way a sufficient criterion for deciding upon the specific investment plans and other economic plans to be followed. A given rate of increase in national income may, for instance, be obtained by a policy of extremely expensive long range investments combined with a very liberal consumption policy and a heavy reliance on foreign aid in the form of loans or gifts. Or the given rate may be obtained through a policy with emphasis on short term investments, a drastic reduction in consumption and little reliance on foreign aid. Or through a policy with some other specifications. In a true programming analysis all these features as well as the rate of increase in national income will follow as parts of the optimal solution.

As a final example, I would like to mention the following: Much attention has been paid to what is termed a *balanced* growth. This too is an example of the pre-programming way of thinking. Two very pertinent questions arise here. What is really a balanced growth? And why should the growth be balanced? There is no way of giving a rational answer to these questions except by starting from well-defined technical and behaviouristic data and a clear formulation of the goal to be obtained and a given initial situation of the economy and a dynamic programming model covering this set-up. The solution of this programming problem will then tell us precisely which sectors it will pay to keep underemployed and for how long. The optimum amount of imbalance and its optimum distribution over the sectors and over time will emerge simply as features of the optimum solution. And it does not seem possible to define what this optimum amount and distribution of imbalance will be except through a dynamic programming analysis. Once a true programming view point is adopted the "balanced growth" way of thinking becomes of secondary importance.

Also many of the other much discussed and often controversial partial questions of planning and growth will fall into focus, I believe, and appear in their logical interrelationships when the problem is approached in a true programming spirit.

Turning now to a specific example of a programming model, the *channel model*,I would like to state quite explicitly that many different types of models are conceivable and may be useful for different purposes, provided they satisfy the criteria which I have put up for a true programming analysis. We may for instance start from programming at the establishment level, taking this word in the standardized meaning of a factory or a technical unit, and proceed by aggregation to higher levels. Some big investment projects may, perhaps, be considered as so many separate sectors, and so on.

The channel model about which I am going to say a few words, is a typical *selection* model, not a model for the study of the implementation problem. It has emerged after a long series of considerations leading to a sort of an optimum compromise between the too complicated and unmanageable and the too simplified and trivial.

The analysis starts from an interflow table¹) of which the upper left corner is a regular input-output table. The remaining rows and additional specifications put particular emphasis on the breakdown of inputs in special categories: Wages, distributed ownership income, non-competitive² imports etc. The model also emphasizes the breakdown of investments into specified channels. There is, in most cases, one channel corresponding to a given sector. And for certain sectors there is a small number of, so to speak, parallel invest-

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¹) Mimeographed copies of the tables distributed at the seminar and referred to in the text may be obtained free of charge from the University of Oslo Institute of Economics.

²) Instead of the term non-competitive it might perhaps be better to use the term *complementary*.

ment channels. For instance, there will be investments in horizontal and vertical expansion in agriculture, horizontal meaning the reclamation of land, and vertical the expansion of capacity of production on a given piece of land.

In each channel there is supposed to be a stock pile of investment projects, each described according to a standard scheme of data. An extremely important task is to make this stock pile as *large* and *diversified* as possible. All possible efforts, imaginative, technical and otherwise should be used to enlarge and improve this stock pile of projects.

Once the stock pile is given, an upper limit is put to the amount that can be spent in each channel. This is an example of the bounds I mentioned before. A fair number of channels to consider may be between, say, 30 and 50, but 70 or 100 will be more satisfactory. And, of course, if the big investment projects are considered one by one, individually, the number will be much greater. It is assumed that in each channel the investment is characterized by the following features.

There is a certain *time distribution of expenses* that will follow if the decision to start this investment is made, and I emphasize the word *if*. It is only the expenses that would follow *if* the decision is made. So far no decision has been made. This time shape of the expenses is characterized by what is called the carry-on coefficients.

The second character of an investment is its *capacity effect*, i. e. the increase in the capacity of production in a given sector that will follow if one decides to start this investment. There will be a waiting time where no increase in capacity emerges. Next a growing time where the capacity is increased up to the maximum that will follow from the description of this investment project. For instance, in a hydro-electric power station some machines may be ready for use the third year, some the fourth year and the rest the fifth year. Next there will be a stationary time during which the capacity is maintained fully, assuming, of course, regular maintenance but no straightforward renewal. Finally, there will be a declining time, until the scrapping of the capital equipment that has been the result of this investment, if one decides to accept it. The gross to gross[1])

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[1]) I. e. gross output to gross investment.

"output to capital" ratio is also a part of this information that characterizes the capacity effect in each separate channel.

Third, there is what I call the *infra effect* of the investment. That is the effect which the investment will have on the various coefficients. This is a more specific use of the word "infra" than that which is implied when we speak of the relation between investment in railways, roads and other big civil economic projects and the usefulness of these projects for military purposes. But the logical essence is the same, namely the interrelationship between sectors and investments. The introduction of the infra effect in the specific sense in which I use the word, makes the programming problem more complex. From the mathematical point of view it becomes quadratic instead of linear (and even of a more complex form).¹)

Finally, in the model it is, of course, necessary to introduce structural relations expressing consumer demand and other structural relations of the economy.

The time horizon to be considered is essential. Even if the planning period itself is limited to, say, five years, it is necessary to consider the repercussions over a longer period. Otherwise one would, for instance, not be able adequately to take account of the capacity effect of such long-lived capital goods as a hydro-electric power station.

The need for distinguishing between the planning horizon and the repercussion horizon introduces a particular difficulty which we may call the *truncation effect.* It consists in the fact that on the one hand we cannot disregard the effects that will produce themselves beyond the planning horizon, but on the other hand the variables that are contained explicitly in the model only give an adequate expression for the several aspects of the economy during the planning period proper. By certain plausible simplifying assumptions one tries to assure a workable solution.

The choice of the preference function is a separate question. The nature of the optimal solution will, for instance, depend essentially on whether we want a rapid rate of growth over the first years or

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¹) A preliminary study of the infra effect is given in my contribution to the volume in honour of Erich Schneider: *Stabile Preise in Wachsender Wirtschaft,* Tübingen 1960.

we are satisfied with a slower rate in the first years in order to get a much more rapid development later. Our attitude towards the desirability of avoiding too much reliance on foreign aid also comes into the picture and, possibly, considerations of employment and other aspects of the economy. It is necessary to use several different definitions of the preference function and several alternative bounds on, say, the foreign indebtedness of the country or on employment etc. For each such set of data the corresponding solution will have to be worked out. In other words the analysis will have to be of the parametric programming type. This is useful as a practical help to authorities in formulating the preference function that is finally to be used.¹)

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Finally, I would like to say a few words on the logical structure of electronic computers of the current types now available. It is, of course, not necessary for the economist or statistician to have a thorough knowledge of the technical refinements of these machines, but it is highly desirable that they have at least some idea of the *logical structure* of the machines. This is essential in order that the economists and statisticians may be able to shape their problems as much as possible in a form which is agreeable to the machine, or at least sympathetic to the coding expert.

An electronic machine can do the same kind of computations as any competent human computer can do with pencil and paper. But the machine can do the job in milliseconds (one thousandth of a second) or in microseconds (one millionth of a second) instead of the seconds, hours or days which may be needed if the work has to be done by a human computer.

Therefore the logical principles of the machine can easily be explained by looking into what a competent human computer can do with pencil and paper.

The human computer will have in the middle of his desk a big sheet of paper on which he makes his computation. And on the left

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¹) At present a good sized problem of this sort is being run on the electronic computer belonging to the *Norwegian Defence Organization.* The work is done under my supervision on data for an underdeveloped country. In this connection I would like to mention the highly competent and constructive coding work done by Mr. Ole-Johan Dahl, research worker connected with this machine.

Folder of data and intermediate results.	Big sheet of paper on the computor's desk.	The University Library and the Central Bureau of Statistics located in the other end of the city.

side of his desk he will have a folder of data and intermediate results that emerge in the course of his computations. And back in this folder he will probably have written instructions that tell him what sorts of computations he is going to make. Finally in the other end of the city there are the University Library and the Central Bureau of Statistics, where he has access to an enormous amount of information and data stored in shelves full of books. Occasionally he may need also some of these data.

The efficiency of his work depends on three things: First, on how quickly he is able to *make calculations* on the big sheet of paper immediately in front of him. Second, on how much data and intermediate results and calculation instructions the folder on his table—and the shelves of the University Library and the Central Bureau of Statistics—*can hold*. And, third, on how quickly he is able to *get hold of* any information which he needs. These three features are technically termed the *calculation speed*, the *store capacity* and the *access time*.

On the big sheet of paper each figure is so to speak immediately accessible. The access time is practically zero. The eye can move from one corner of the paper to another in practically no time. But the store capacity here is very limited. True enough one could build a very big desk with a very big sheet of paper on it, but this would be extremely expensive and unwieldy.

Therefore, it is convenient to have the folder on the left part of the table. In this folder the store capacity is much larger than on the big sheet of paper, but in turn the access time is longer. It takes a little time to look up in the folder what is needed at any moment. The access time in the folder is, of course, all the shorter the better the system of classification used in the folder. The store capacity in the folder, while much larger than the store capacity of the single sheet of paper, is however limited.

If the University Library or the Central Bureau of Statistics are drawn into the picture, we get a store capacity that is for all practical purposes infinite. But in turn the access time is here very long. Or, to be more precise, there is a peculiar difference between the way in which the access time manifests itself in the folder and in the library. If we are to look up an information in the folder, this will take an amount of time which is practically *independent* of what we were looking for in the folder a little while ago. But when it comes to the library, this is not so. Here it is very essential to plan the *order* in which we are going to fetch the data. It would be very time consuming if we were to run back and forth to the library to pick up now one piece of information and now another. We must plan ahead the kind of information which we are likely to need from the library for the next days or weeks or months and then *copy this information* on the sheets which we insert in the folder. From the folder we can then look this information up fairly quickly whenever we need it. When a piece of this information is needed for actual calculation we will further copy it from the folder to some convenient place on the big sheet of paper on the desk.

These selected figures that are now copied on the paper, can then be combined with great speed, and the result can be put back into the folder for later use, or perhaps even be sent back with a messenger boy to the library for temporary storing there.

The electronic computer does not use pencil and paper but various kinds of electric and magnetic signals. These signals are expressed in binary digits, that is in a system where there are only two known symbols, namely 0 and 1, or if you like "yes" and "no". In this system our usual numbers will be expressed as follows: zero = 0, one = 1, two = 10, three = 11, four = 100, five = 101 and so on. A word or a number is made up of a sequence of such 0 and 1 signals. Usually this sequence—the wordlength—is represented by something between 40 and 50 binary digits. This corresponds roughly to something between 12 and 15 decimal digits. (Certain machines, or parts of machines, may have a device for translating 4 or 5 binary digits to one decimal digit and perform the actual calculation in decimal digits, but this is no exception to the general rule that the basic working system of the machine is expressed in binary digits.)

On an electronic computer the device which corresponds to the big sheet of paper is called the *high speed memory* and is technically in the form of a large number of ferrit cores, one for each binary digit. Here the access time is of the order of one or two microseconds, that is to say, roughly one millionth of a second. This means that we can look up a new figure in about one millionth of a second.

It is difficult to visualize what this really means. You can do it perhaps by a comparison. Suppose that you have a very lazy human computer. He is so lazy that it would take him, say, 10 days to move his eyes from one figure written on the big paper on his desk to another figure written on that same paper. This man would need roughly, I think, 15 months to compute the product of the two numbers 13 and 27. If we compare the relative efficiency of this lazy computer to that of an ordinary human computer, we have an illustration of the relative efficiency of an ordinary human computer to that of the machine.

The store capacity in the high speed memory may be from 1024 words to 16 times 1024 words (and in some machines even larger). The figure 1024 is used as a unit because it is a power of 2, namely 2^{10}.

The folder to the left on our computer's desk is in the electronic computer represented by *magnetic drums*. They are cylinders on the sides of which is impressed information in the yes- and no-system. They revolve at a high speed. And there are reader heads able to pick out the number—or word— we want when it comes along as the drum revolves. Therefore, the access time will depend essentially on the speed of rotation of the drums. The revolution time may be, perhaps, around 12 milliseconds. The usual procedure will be to transfer one *track* of information—or a half track—from a drum to the high speed memory when this information is needed for the computation.

The store capacity will depend on the size and the number of drums. A drum may contain anywhere from a few thousand to perhaps 24 times 1024 words. And one installation may contain anywhere from a few drums up to perhaps 16, or even more drums. This gives a store capacity of from around 10 000 words up to perhaps half a million or a million words in a very big installation.

Finally, the library in the other end of the city is represented in the computer by a *magnetic tape*. Here the access time—if you should need to wind up the whole tape—will not be calculated in microseconds as in the high speed memory. It will be a matter of several minutes. But if you can arrange the work in such a way that you transfer the relevant part of the tape information to a magnetic drum or even to the high speed memory at *the right time before the information is needed*, the whole work may nevertheless proceed quickly.

On tape the store capacity is practically unlimited. Not only will one tape contain an enormous amount of information. But several tapes may be combined into big aggregates.

There is only one limiting factor for store capacity in the high speed memory or on drums or on tape and that is the *cost* of the installation. A relatively small sized computer may cost perhaps one million Norwegian kroner, and a really big sized computer may run into fifty or even a hundred million kroner.

I am afraid that a coding expert would be horrified by the lack of precision in this extremely simplified explanation, but I believe that my explanation does give the logical essentials which the economists and statisticians need to know. It is my opinion that the time has definitely passed when a competent economist and statistician can afford to be completely ignorant of modern computing machines.

DISCUSSION

Observations were made by Mr. Hans Jacob Kreyberg, Mr. Michael Kaser, Mr. Leif Johansen, Mr. Knud Erik Svendsen, Mr. Yousry Sadek, Dr. Rolf Krengel and the lecturer.

Regarding the preference function, one speaker wished to know how Professor Frisch arrived at the specification of such a function. The speaker's own opinion was, that in general, people have great difficulties in making their preferences explicit. Usually they express a mixture of their true preferences and their own private models. Since Professor Frisch in his lecture did not mention the three attitudes towards Soviet economics, one of the speakers asked him to do so. He was also interested in the structure of the decision-making process, and whether there was a strong influence of the decision-making structure on the choice of programming. Concerning the programming in the Soviet Union, he thought the few Soviet attempts were largely limited to linear programming, although they have begun to extend into quadratic programming.

One speaker pointed out the importance of internal reserves in the underdeveloped economies and the aid of technological know-how to these countries. He described the Soviet material balances from the early nineteen-twenties as preprogramming methods. He thought, however, they now passed into the programming period and would be able to apply this far more efficiently than many western countries. A main problem in programming in the East European countries was to find the combination between the flexibility in planning and the strict programming computation. Concerning the "Channel Model," he thought there was a weak point in the application of the model regarding the stock pile of investment projects. The "Channel Model" has to take this stock pile as given, and the achievements in the plan, computed by means of the "Channel Model," will be confined within the limits set by the stock pile. With relation to the preference function, he found it difficult to see the usefulness of computing results according to these functions as long as people can not tell exactly or approximately the composition of their preference function. He would rather try to depict some representative possibilities within the restrictive boundaries of the model, and ask people to choose directly from this set.

Observations were made as to the view of Professor Frisch that it was not logical to start with a given growth rate. The speaker said one often wonders if the Eastern countries do not in some respects start with some goals which they want to obtain, and calculate what is necessary to reach these goals. In many respects the plan was not only a question of obtaining the optimal solutions of different relations, but having a plan was also a mobilizing effect. To this question another speaker said that he could not see that there was a conflict between the programming approach to economic planning, as set out in the "Channel Model," and the mobilizing effect of having a plan with certain specific goals like in the Soviet Union. He thought one could use the "Channel Model" or some similar model, compute the plan, find out which rate of growth of national product was to be achieved, and then, on that basis, start the propaganda or the mobilizing effect. Another comment concerned the too strong use of mathematics in economics. The speaker did not need mathematical methods he said, to know that people in Africa or India have not enough to eat and that they have an underdeveloped agriculture and industry.

Professor *Frisch*, in winding up the discussion, made the following observations:

Regarding the *three attitudes* to Soviet economics: One can either take an over-negative attitude, distrusting any information, statistical or otherwise, that comes from this country, using all one's mental energy and imagination to "prove" that this information is misleading. Or one can take the over-positive attitude which consists in believing as a matter of dogmatic theology every rosy picture of the Soviet economy that is circulated. The third attitude is the truly objective one which has been displayed so eminently in this seminar.

Regarding the *vicious circle* in the underdeveloped countries: We must, of course, not only think of foreign aid but also of developing the hidden resources —material and human—in these countries. The development of Japan is a case in point. Without much foreign aid this country has made big strides in light industry, for instance in quality products like cameras, optical instruments etc. In a different direction China has made progress without much foreign aid. But in most countries the conditions for a successful take off is less favourable and some foreign aid is necessary.

Regarding the specification of the *preference function:* It is admittedly difficult to formulate interview questions that will reveal the preferences of responsible politicians without awaking unintentionally their own thinking in terms of their own model, whatever it is and however imperfect it may be. The preference function must be purified from such thoughts. A familiar example from the application of the theory of choice to the analysis of consumer demand will illustrate the particular aspect of a preference function which it is essential to retain in programming work. If a set of indifference curves (or surfaces) and a budget equation under constant prices are given, the substitumal can be constructed and thus it can be shown how the equilibrium point changes as the income increases. In order to expound this theory we need what may be called the *free* preference function, i. e. a preference comparison between all points in space, not only between points on the substitumal. I think the corresponding problem in programming can be solved. It is possible to formulate a well thought out system of questioning which is such that, while the responsible politicians do not fully understand the nature of the information the expert is looking for, they are nevertheless able without too much difficulty to give answers from which the expert will be able to compute the kind of information which he needs. A number of memoranda from the Oslo University Institute of Economics—based on experiences also in underdeveloped countries—is concerned with the technique of such interviews.

Other questions of a more statistical nature are really more difficult from the programming viewpoint. For instance, what is really meant by the figure which we take as an expression for the national product? Even without going into the troublesome question of prices that change over time or the question of market prices vs. factor cost etc., we may get a sample of the difficulties by thinking, for instance, of the serious moral dilemma in which a bachelor statistician (not living in Finland) will find himself if he wants very much to marry his female servant, but at the same time feels that he ought not to do anything detrimental to the national product. If we really try to go to the bottom of these and similar questions, we may get into a mood of despair. But no defeatist attitude should be allowed. To any practical problem we *must* find a solution.

Regarding rational programming methods in the Soviet Union: As a scientist I can only feel happy to see refined programming methods applied everywhere on the macroeconomic level (not only to specific problems of an entrepreneurial character such as a specific transportation problem or the organization problem in a specific factory etc.).[1]

Regarding the *flexibility* of the planning work and the sending of draft plans back and forth between different levels: In the case of a material balance method the sending back and forth is mathematically speaking only a technique of iteration which can be replaced technically by a method that aims directly at finding the exact solution. But the administrative aspect remains. It is impossible for one human being—or a few—to keep track of all details in an economy. This is why a certain *pyramidation* of decisions is unavoidable and should be faced squarely.

Regarding the importance of a good *stockpile of projects:* I have stressed this importance very much myself on several occassions, although time did not allow me to go into detail when I presented my lecture. From common sense or from the experiences of previous calculations one will often know that there are certain features of investment projects which are particularly valuable in helping to push ahead towards a high optimum solution. Therefore, the planning authorities should issue ahead of time what may be called a project guidance. But this being said, I want to add that it is dangerous to go too far in this direction. We must rely on the creative imagination of all layers of the whole population. And for best results the project-makers should not be put in a Procrustean bed. Everybody should be encouraged to bring forth new ideas however wild they may look.

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[1] See also the footnote on Sovjet methodology added above on p. 57.

But a collection of ideas is certainly not *enough*. One will need a systematic method for distinguishing between what is valuable and what is useless from the viewpoint of the preferences of the policy makers. Only scientific programming can provide such a criterion.

Regarding the need for calculating *different solutions* according to different preference functions: In theory it would be nice to have only one preference function. But in practice the problem must be approached through tentative steps. This is only another aspect of the need for a close and constant co-operation between the responsible political authorities and the analytical technicians, a theme to which I have reverted again and again in memoranda and other publications. One will never arrive at an exact setting of the problem to begin with. One has to feel one's way and experiment *on the computing machine* (in somewhat the same way as the military strategists fight battles or even wars on the computing machine). This will not only serve to bring out the true preferences of the responsible politicians, but may also frequently reveal holes in the model of the technical analyst. For instance, several years ago when we started our macroeconomic programming research in Oslo and we wanted to find out the best way to save foreign currency, the machine discovered—quite correctly—that a really effective way to do this would be to stop all consumption and let the population starve. And on another occasion the machine discovered—again quite correctly—that it would be an excellent solution to work certain production sectors with a *negative* production because this would *create* scarce resources that could be very effectively used in other directions. The answer to such difficulties is, of course, that we had forgotten to include all the realistically relevant bounds in the model.

Regarding the *mobilizing* and *inspirational* effect of targets: Of course, this effect exists and should be fully exploited. But the targets should be publicized only after the plan has been elaborated by rational programming methods.

Regarding the need for *birth control* in underdeveloped countries that have a high rate of population increase: The attitude to take to this question depends entirely on the specific situation in the country one has in mind. Frequently the problem appears more serious than it really is, precisely because one has not taken sufficient account of the increased possibilities of rapid economic growth that stems from a rational application of scientific programming. The popular exercise consisting in computing what will happen if a population growth curve with a given rate of growth persists for many hundred years, reminds me of the concern of the philologist who had found a tendency for words to become shorter and shorter and therefore feared that some day in the future we would all have become dumb.

Regarding the *usefulness of mathematics* in the field of programming. The problem cannot be fruitfully discussed in an abstract way, but depends on the situation in the country and, of course, on the programmer having a minimum of common sense. A macroeconomic programmer would not need much mathematics to discover that there is a need for raising living standards in many countries in Africa and Asia. But he certainly will need mathematics if he wants to find out the *optimum way* to achieve an improvement.

To a large extent effective programming is an *art*, not a science. Creative intuition and practical sense will always be needed. What scientific programming does is not to do away with these mental powers but to push forward by leaps and bounds the *frontier of demarcation* where we *have to* start using our intuition and practical sense. This is really what scientific programming does, and it is in this spirit that I have tried to convince you of its usefulness.

ECONOMIC PROBLEMS IN A RICH COUNTRY: CAPITALISM VERSUS SOCIALISM¹)

By *Leif Johansen*²)

I

Economics has in the present century been a rapidly developing science. One reason for this is that almost every decade has faced the economist with new problems. In the twenties static equilibrium theory and trade cycle problems attracted much attention. The depression in the thirties, which surpassed anything known from before and which seemed not to prepare the ground for a real recovery like earlier depressions, called to the economists' attention the possibility of a sort of equilibrium at a low level of employment and with production far below the productive capacity of the society. Also for some years after world war II these problems were dominating in macroeconomic thinking. However, as time passed with no crises comparable to that of 1929—30 and production in many countries displayed a fairly regular pattern of growth, the notion of economic growth gradually gained a central place in economic thinking and economic theory.

In our present context it is interesting to notice that modern economic growth theory is not directly an outcome of conscious interest in growth *as such*. Rather it started as a by-product of a study of employment problems. Only gradually did growth on its own account become a central theme. I shall return to this later.

At present a new field of problems is entering into economics.

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¹) Some of the ideas contained here have been discussed more extensively in my paper "Liberalistisk økonomi og planøkonomi" ("The economics of liberalism and planning"), *Statsøkonomisk Tidsskrift 1960, pp 157—179.*

²) University of Oslo.

This field consists of the particular problems encountered in a rich country, by which I mean a country having a productive capacity sufficient to provide all the population with means to satiate fully all basic private consumption needs. As an economist I certainly hesitate to use the latter expression, and an attempt at further explanation might be requested. Maybe the following can serve as a tentative definition: A certain level of consumption covers the basic needs when external influences, for instance through advertisements or through social pressure, are necessary to induce the consumer to take any effort to increase his consumption over this level. Also those needs which develop only as a result of education beyond the average level of education in the advanced societies of to-day will not be included in what I call "basic needs." This definition is admittedly rather vague and hypothetical. Let me add, therefore, that the USA has definitely entered the stage where "the problems of a rich country" as understood here are no longer only problems of the future, and other countries, among them the USSR, are probably approaching this stage.

To say that the USA has entered the stage of being a rich society in the present sense does not, of course, imply that all inhabitants have satiated there basic needs. On the contrary, direct poverty seems to survive to an extent which is not negligible.

The most famous discussion of the problems of a rich society is to be found in John Kenneth Galbraith's book, *The Affluent Society* Although many of his viewpoints might be questioned it is convenient to take it as a starting point here.

Galbraith considers the following problems as the most important problems of a rich society as observed in USA.

1. The problem of inflation.
2. The creation of demand for consumers' goods which do not add to human well-being.
3. The problem of "social balance," i. e. the problem of achieving a balance between the production of goods for private consumption and public services or collective consumption.

To this list we should perhaps add the survival of poverty in the midst of abundance as mentioned above.

It may be taken as an observed fact that all these problems present themselves in the contemporary US economy. In the sequel I shall offer some considerations which seem to indicate that these problems are not easily solved within the framework of a highly developed capitalistic economy of the US model, and I shall pose the question whether this will be true also for a highly developed socialist economy of the Soviet model.

II.

Let me first consider the problem of inflation.

I myself don't know whether I would say that a slow inflation of the type observed in the postwar years in USA and Western Europe is really a serious problem in itself. However, it cannot be denied that many people consider it a serious problem, and this fact at least makes it deserve attention. It is of course also true that inflation causes some redistribution of private wealth and that it introduces uncertainties into private production and sales planning and into the system of private contracting which is a part of the very basis of the capitalistic system.

Now certainly any slow inflation could be curtailed by a sufficiently restrictive monetary and fiscal policy. The problem, however, is whether this can be done without creating considerable unemployment at the same time. By now many competent economists consider it as an established fact that it is impossible to keep both stable prices and full employment for a sequel of several years if one does not employ any direct control of wages or prices or both.

One reason for this is the well known fact that conditions of full, or nearly full, employment tend to promote wage increases, and with the high level of demand under these conditions wage increases will give rise to price increases. Professor Phillips has studied these problems empirically for England and found a significant correlation between the rate of unemployment and the rate of increase of wages. The functional relationship seems to have been approximately the same over several decades.

Another aspect of the problem is related to the difficulty, or rather impossibility, of influencing total demand through monetary and fiscal policy exactly to the level corresponding to full employment, or a certain specified high level of employment. If total demand should fall short of this the consequences are rather unpredictable since it may start a dynamic mechanism which operates through decreasing investment activity.

A safe strategy should therefore have a small probability of failing in this direction, and consequently one may on average have a certain excess demand which keeps the price level rising.

Finally there is the so called "demand-shift" aspect of inflation. Economic development does not affect all production sectors to the same extent. There is a continuous shift in the direction of demand due to rising incomes, and there are more sudden shifts due to the appearance of new goods etc. The development of foreign trade is far from proportional, and the composition of investment is also not very stable. Under these conditions it is impossible for the productive capacity, the sectoral distribution of the labour force, and the composition of demand to be perfectly balanced against each other at any time. Since productive equipment is rather rigid and labour is not very mobile, in order to prevent unemployment from reaching high levels in certain sectors it may be necessary to keep *total* demand so high that excess demand occurs in other sectors. Furthermore, since prices are far more flexible upwards than downwards, this may result in an upward drift in the price level.

At different times not all of these three forces will operate equally strongly, but together they seem to rule out the possibility of achieving and maintaining both full employment and a stable price level for a sequence of years if one is to rely only upon traditional monetary and fiscal policy.

Recently professors Samuelson and Solow studied this problem empirically for the US economy in the last 25 years (see *American Economic Review*, no 2., 1960, "Papers and proceedings"). They conclude by presenting a "menu of choice between different degrees of unemployment and price stability," which includes such possibilities as for instance 2 per cent price rise per year and 4 per cent unemployment, 4—5 per cent price rise per year and 3 per cent unemployment etc. The price of a stable price level should be 5—6 per cent unemployment.

Now I think it may be somewhat misleading to give the impression that USA can choose between such alternatives, since it is very doubtful whether cyclical movements can be eliminated. However, I shall not pursue that question here.

How is it with inflation in an economy of the Soviet model?

None of the three sources of inflation indicated above should be able to produce inflation in a socialist economy.

The wage-push can be difficult to avoid at early stages of socialist planning such as in some Eastern European countries. In a well established system like the Soviet system where the trade unions cooperate closely with the planners an inflationary wage push should not be necessary.

The necessity of keeping a certain excess demand in order to prevent large unemployment stems mainly from the instability and unpredictability of investment demand in a capitalistic economy. In a socialist economy investment is determined within the framework of a national economic plan and there is no danger of investment activity suddenly falling.

Finally concerning the "demand shift" aspect. Labour mobility is probably higher in Soviet than in western countries. At least, rather large scale labour transfers take place on the basis of the economic long term plans. Also, the planning authorities have power to enforce price cuts, there being thus no downward rigidity of prices in sectors with insufficient demand.

On the whole, therefore, there should be no reason to expect any slow inflation of the western type in USSR. At present the movement of the price level seems to be governed by two considerations.

1. To the extent that the authorities want to increase the consumption of *the whole population*, this is most conveniently achieved through price cuts. These can vary between goods such as to restore sectoral equilibria where they have for some reason been disturbed.
2. To the extent that one wants to influence the consumption or real income of *particular groups*, this can most conveniently be achieved through changes in wages and salaries (or prices in the case of collective farmers). In recent years there has been a tendency to increase the lower wages proportionately more than

higher wages. Such wage changes may of course influence prices through costs.

Recently an empirical investigation of the development of the price level of the USSR is presented by F. D. Holzman in *Quarterly Journal of Economics*, no 2, 1960. It appears that there were periods with considerable price increases in the prewar years, and during the war a certain inflation took place. However, after the currency reform of 1947 the trend was decreasing. At the moment the development of the price level is governed by such considerations as are given above, with no clear trend, and certainly none which deserves the label inflation.

I said above that I don't know whether I will consider the slow inflation in capitalist countries as a serious problem in itself. However, if as a consequence of the alternativity of price level stability and full employment the capitalistic countries will pursue a policy which implies unemployment, then certainly it is important for the economic competition between the two systems and the capability to avoid such inflation even under full employment is a definite advantage to the socialist economy.

III.

The next problem we should consider is the excessive creation of demand for consumers' goods which hardly add anything to human well-being.

Now economists have generally taken the individual preference scales as something given. If people want all these goods, what is there to say for the economist qua economist?

One aspect of the problem can be treated even when sticking to the "moral code" of taking the individual preferences as a given datum. This aspect is related to the so-called "demonstration effect" in consumers' preferences. In recent years, and particularly through the works of professor Duesenberry, the attention of economists has been drawn increasingly to the fact that an individual's evaluation of a good does not only depend upon his own consumption in absolute terms, but also upon how his consumption compares with other individuals' consumption. To the extent that this is true all theo rems from the classical welfare theory about the efficiency of the price mechanism as a regulator of consumption and production cease to hold good.

Suppose that consumption of "demonstration goods" has become very wide-spread. Without imposing any preferences of his own the economist can in such a situation say that collective actions to the effect of reducing the consumption below what it would be in the case of a free market with no discriminatory taxes, would increase the general welfare society. (This statement presumes, of course, that collective actions are not considered as evils in themselves.)

Next, however, it is doubtful whether it is justified to consider the individual preference scales as given data as is usual in economic theory. This might have been an appropriate assumption at lower levels of income than those of the most advanced present societies. To-day consumption consists to a considerable extent of goods which can hardly be called necessities, and it is all too evident that individual preferences concerning such goods are strongly influenced by advertising and other sorts of sales promotion. Leaving this fact out of consideration may be justified in other context, but hardly in the present context.

Modern sales promotion of course exploits and supports the "demonstration effect" mentioned above.

These conditions lead to a production of certain consumption goods far beyond what would be compatible with maximal welfare. The alternatives to this production are three:

1. Higher level of public or collective consumption.
2. Higher production and private consumption of other goods, the evaluation of which depends to a smaller extent upon the "demonstration effect" and upon advertising.
3. Shortening of hours of work.

The first point will be left for closer consideration later.

Out of the two last points it follows from our definition of a "rich society" that the shortening of hours of work and (as a part of point 2.) a fuller satiation of such needs as develop as a result of education would be the more important.

Now, if there should be general agreement upon these viewpoints

—would a capitalist economy of the US model be capable of improving this situation? Maybe to some extent, but both theoretical reasoning and experience seem to indicate that the difficulties cannot be efficiently overcome within the institutional framework of a free enterprise economy.

The "negative remedy" would be to restrict or prohibit certain types of advertising and sales methods. This may be possible, but hardly conceivable in practice to any significant degree as long as competition is cheered as an official ideal. The moral or value system of the free enterprise economy certainly also tends to emphasize the "demonstration effect".

A positive measure would be to shorten the hours of work. This has been done several times and is of course still possible. However, there are reasons to believe that this process will not take place as fast as maximum welfare would require. The main reason is that a shortening of the hours of work will reduce the returns to capital invested in private enterprises, or, at least, it will seem so from the viewpoints of the individual enterprises. A shortening of hours of work will therefore generally be opposed by capital owners.

A problem of great theoretical interest is whether it is possible for a capitalist economy to secure high employment without going on increasing production. Under the present structure of the advanced capitalist economies a high employment can only materialize when there is also a fairly large investment activity. However, what is investment and thus provides employment opportunities in the present time period is an addition to the productive capacity in the next period. Therefore, in that period a full or nearly full employment will produce a larger amount of goods, and still higher investment activity may be necessary to create a sufficient total demand to absorb all these goods. Actually, as I have already touched upon, by this line of reasoning modern theory of growth started as an outgrowth of an analysis of employment problems. Logically it is possible to break out of this circle. That would, however, require such structural changes as are hardly conceivable within any narrow time horizon.

For all these reasons there appear to be great obstacles to a relaxation from the private consumption race as it is presently observed in USA, even if this would be preferable to the great majority of people.

Now, will a rich socialist society be caught in the same trap? I would say no, with some qualification. It follows almost directly from the definition of "demonstration effect" that the prerequisite for avoiding its welfare-reducing effect is the possibility of appropriate *collective actions*, i. e., institutional arrangements through which people could make agreements on and carry out actions which bring about "corrections" to the effects which result when all individuals pursue their own individual aims. A socialist society is certainly well furnished with such institutional arrangements.

The most near-to-hand actions to counteract the demonstration effect are three: In the first place, to stop production and marketing of such goods as derive their market value mainly from this effect; in the second place, to stop advertising and sales methods which exploit peoples' leaning towards demonstrative consumption; and in the third place, to tax heavily the consumption of such goods in order to reduce the consumption. It is a matter of course that such actions will be strongly opposed in a capitalist economy, since they interfere with the market, and strong economic interests are bound up with such production and marketing. In a socialist society sufficiently strong economic interest will hardly exist to prevent such actions.

And now the qualifications.

The main difficulty for a socialist society would lie in the fact that there are indeed very few goods which derive their value for the individual *entirely* from the demonstration effect. Most goods which serve to satisfy the individual's leaning to demonstrate also serve some useful purpose besides this, as for instance a motor car. One can therefore hardly avoid completely the demonstration effect.

Secondly, there is probably a certain spread effect from capitalist countries into socialist countries.

In spite of this one should expect a socialist economy to be capable of avoiding undesirable consequences of the demonstration effects to a far greater extent than a capitalist economy. The real test of this will come when the USSR attains a level of income per head approaching the present level in USA. However, I think there is already evidence which testifies in support of our hypothesis. The main evidence is the considerable shortening of the hours of work which is partly carried out already and partly planned for the first years to come. The hours of work in USSR will by this be reduced to a level below that of any other country at a comparable income level. It should be noticed in this connection that there appear to be rather strict limits to overtime work in USSR.

Other evidence to the same effect are statements from responsible politicians that USSR will not adopt the USA ideal of "every man his own motorcar" (or even more). Instead they will develop an efficient network of public transport means, taxi stations and public hire and service stations for motorcars. This is certainly one of the fields where the demonstration effect has proved to be very influential in western societies.

IV.

The third problem of the rich society is, in the words of John Kenneth Galbraith, the problem of achieving a "social balance," i. e., an optimal allocation of the means available for total consumption between private personal consumption and the consumption of public services. Galbraith maintains that there is in USA an underoptimal allocation to the public sector. In his words: "The line which divides our area of wealth from our area of poverty is roughly that which divides privately produced and marketed goods and services from publicly rendered services. Our wealth in the first is not only in startling contrast with the meagreness of the latter, but our wealth in privately produced goods is, to a marked degree, the cause of crisis in the supply of public services. For we have failed to see the importance, indeed the urgent need, of maintaining a balance between the two."

Galbraith says—"we have failed to see the importance." However, suppose that "we" see the importance. Would the problem then be easily solved? Of course, if "we" are politically influential people, a recognition of the importance of the point would help. There are nevertheless strong reasons to believe that there will be a lasting and systematic bias in the allocation in disfavour of the public sector of any capitalistic economy.

The main reason is that the overwhelming part of the total income in the capitalist economy is earned as private income. In some form or other government therefore has to tax these private incomes to an amount corresponding to the public consumption, apart from situations in which a deficit is desirable because of deflationary tendencies.

Now tax increases will almost always be opposed. This is partly because debates and decisions on taxation and on public expenditures are often not sufficiently closely connected.

Usually there will also be quarrel about the *distribution* of the taxes, and it is easy to understand that this may tend to reduce *total* taxes and thus also total public spending below the optimal amount.

These considerations apply possibly to a lesser degree to sales or turnover taxes than to income taxes. But also these taxes, and particularly switches between income taxes and such taxes, involve distribution problems.

Another fact will also tend to work in the same direction. Suppose taxes are uniform over a whole country and that there is no quarrel about this. Suppose also, as is often true, that the benefits from a single item of public expenditure accrue to a smaller group of the population. Majority voting, which is the usual instrument for making decisions on public expenditure in advanced capitalist countries, will then result in small expenditures on such items to the extent that voters are led by self-interest when voting. (At least this will be the result if there is no log-rolling.) The total result may be regrettable to the majority since the benefits accrue to different groups of people each time.

When the groups which benefit are geographically defined the problem can, and is in fact to some extent, solved by decentralizing the decisions. There are, however, many relevant groups which are not geographically defined.

Finally there is a political consideration. An increase in the share of total production which is allocated to the public sector may in many cases be interpreted as a step in the direction of socialism. It may also be actually true that a large public sector will make easier a transition from capitalism to socialism. To the extent that the dominating groups in a capitalist economy are interested in defending the existing system, there is therefore still one reason why the public sector in a capitalist economy will not attain that size which would bring about "social balance" in the sense of Galbraith.

A socialist economy will not encounter all these obstacles to attaining a "social balance," or, at least, not encounter them to an equal extent. In a socialist economy the greater part of the means for financing public consumption is never paid out to private income earners. As is well known, income taxes are about to be completely abolished in USSR, and the so-called "turnover tax" is mainly a transfer within the public sector itself, namely between state owned enterprises and items of the sentral budget. It is obvious that it is easier to finance a great public consumption under circumstances in which incomes are simply withheld from private consumers than when they first accrue to consumers and then have to be cashed in through taxation. It also seems probable that the quarrel about the distribution of the burden of financing the public consumption will be lesser under such conditions.

Finally, presumably there should be no fear of socialism in a socialist society.

In confirmation of the above considerations actual facts show beyond any doubt that the share of collective consumption is larger in USSR than in any capitalist economy. Particularly the shares devoted to education, culture and health are evidently very high as is now a matter of general recognition. It appears that the USSR has adhered to and implemented a dictum laid down by Karl Marx in his *Critique of the Gotha Program*. In that work Marx noted that, in a socialist society, before the portion of the social product destined for private consumption could be distributed, it would be necessary to deduct therefrom not only the costs of administration, but "...that which is designated for the joint satisfation of needs, such as schools, public health institutions, and the like. This share immediately (i. e. immediately after the transition of power. L. J.) shows a substantial rise in comparison with its share in contemporary society, and will continue to rise as the new society develops."

In the recent authoritative Soviet textbook on Marxism—Leninism the principle is expressed as follows: "That part of the total consumption fund which is distributed independently of the quantity and quality of work performed by the individual worker grows faster than that part which is distributed according to the quantity and quality of work."

V.

I have so far treated the three problems of the rich society—the problem of inflation, the problem of excessive creation of demand for private consumers' goods and the problem of achieving a social balance—as independent problems. However, in fact they are rather closely related so that measures which help to solve one of them usually help also in solving the others. The main interrelationships between the problems are probably the following.

The race of private consumption tends to intensify the struggle about the income shares which is one of the sources of inflation.

The creation of demand for private consumption goods through the demonstration effect and through modern salesmanship hampers the achievement of a social balance in the sense given above, since it is not offset by any similar effects or activities in favour of collective consumption.

The underdevelopment of the public sector tends to increase the problem of inflation for at least two reasons. A larger public sector would constitute a larger core in the economy which would not be subject to such instabilities as for instance private investment activity. Therefore it would probably make it easier to safeguard oneself against dynamic depressionary mechanisms with a smaller excess demand than would otherwise be necessary. Secondly, a part of a larger public consumption could be used for purposes which increase the mobility of labour, such as free education when shifting profession, a housing policy in accord with the needs for labour transfers etc. This would reduce the pace of inflations of the "demand shift" type.

It may also be argued that the prevailing social imbalance supports the private consumption race, although the effects in this case are not of a purely economic character. The main consideration is that a more highly developed policy in the fields of culture and education might influence the scale of values and divert people's attention somewhat away from the struggle for "keeping up with the Joneses" in terms of private consumption.

Thus we can say that generally each of the problems tends to aggravate the other ones. Possibly there is, however, one exception to this rule. It is hardly conceivable that the real rate of taxation which now prevails in the majority of advanced capitalist countries would have been achieved in the absence of the slow inflationary development of prices, since the state has now "benefited" from the fact that inflation in the case of fixed tax regulations and tax rates increases the real rate of taxation. However, also in this case there is one contrary effect. In the case of inflation governments and parliaments may restrict themselves more in sanctioning increases in public expenditures.

The interconnections between the problems pointed out in this section suggest that it is more than an accident that a rich capitalist country generally seems to encounter all these problems whereas a socialist economy encounters none of them to an equal degree.

VI.

In the introductory remarks I mentioned that the survival of poverty in the midst of plenty should perhaps be added to the list of problems of a rich society.

It is hard to say how far this is a necessary characteristic of a capitalistic society. For instance in the Scandinavian countries plain poverty appears to be eliminated to a greater extent than in the USA although the latter country is definitely at a higher level of *average* income.

Nevertheless, whether this problem will be solved or not within the framework of a capitalist society, it is likely that it is *easier* to solve it in a socialist economy. The main implement for this is of course the greater public expenditures which make possible subventions to handicapped groups to a greater extent than in capitalist societies. Other points of importance are that labour can be transferred more easily out of areas with insufficient natural basis or out of industries, the products of which do not share proportionately in the growth. It is well known that poverty for instance in USA is often found in areas with stagnating industries. To this one should add the assurance of employment for everybody who is capable of work.

In some countries—I think in the USA more than in, e. g., Scandinavia—social security arrangements are often opposed because of a suspicion that they will be misused and that they will reduce incentives to work. Whether these fears are well founded or not in the case of a capitalistic economy, they should cause lesser concern in a socialist economy. Direct control and moral pressure through organizations of various sorts are probably stronger, and non-economic incentives are probably more influensive there, although the authorities stress the importance of taking into account in the present stage of development the economic incentives in the design and implementation of the policy in such fields as wages and prices. Under communism, as is well known, labour shall no longer be felt as a burden, but rather as a field of activities which the individual prefers to undertake, partly as a result of social responsibility, partly as a result of an attitude similar to that which makes people like sporting and cultural activities. If, or when, such a stage is reached, of course no consideration of economic incentives will hamper a social policy.

VII.

I will not conclude this lecture without saying that I think the problem of attaining a high and steady rate of growth of production will still be the most urgent economic problem for many years to come, although some of the problems explored above will become increasingly more important.

So far no country apart from the USA has achieved a production capacity which, if appropriately used, would be sufficient to satiate all basic private consumption needs in the sense said in the introduction. However, a redistribution of income and a redirection of production to such a scale that it is hardly conceivable during a short time would be necessary in order to actually satiate the needs of all groups of the population

Next there are needs which are not "basic needs" as understood here, but which should nevertheless, I think everybody would agree, be satiated. These are the cultural needs which arise only as a result of education. With a high education for broad masses of people there is hardly any near limit to these needs.

Finally there is the need for assistance to the economically underdeveloped countries. There is hardly any doubt that this need will claim an increasing part of the production of the most advanced countries. Within the camp of socialist countries it is an official goal gradually to equalize the income levels of the different countries, and USSR will no doubt also extend its economic assistance to an increasing number of countries outside this camp.

Therefore, I think it would be mistaken to leave the impression —as does perhaps professor Galbraith—that the advanced countries will, or should, in the near future stop being concerned with the problem of how to attain a high and stable rate of growth of production. Rather, I think we shall have both the growth problem and the field of problems treated in this lecture.

Actually, the problems or fields of problems are, at the present stage, complementary in several respects. It is obvious that the inflation problem considered above does hamper economic growth in the capitalistic countries. For instance the set-back in 1958 was partly a result of attempts to stop the increase in the price levels in USA and Western Europe. The absence of this problem in the USSR puts that country to a great advantage from the point of view of economic growth.

As regards the problem of the "artificial" creation of consumers' demand, to the extent that socialist countries succeed in avoiding this problem it will help in keeping investment at a high level.

Also the better solution to the problem of the "social balance" in the USSR is a great advantage for economic growth, and will probably be so to an increasing degree. The reason is mainly that science, research and education grow steadily more important for the methods of production, and they require a large public sector.

To quote from the recent study, *The Economic World Balance*, by professor Thorkil Kristensen and associates, "It is apparent that the leaders of the USSR have to a greater extent than those in any other region made use of the cultural factors in their society to promote economic growth." As already touched upon, the large public sector also provides better conditions for transfers of labour between regions or production sectors.

Finally I should like to remark that although the term "the affluent society" is brought into economics from USA, it is in the USSR one can find the broadest and most serious discussion of how society should be organized in order to make affluence produce real human welfare, and the most conscious measures to face the state of affluence. This is exactly the problem of communism, which is discussed with increasing concreteness in the USSR. Among the perspectives are:

1. A rise in the general level of education or qualification for work to about the present level of engineers.
2. Through automation a gradual decrease in the number of jobs which require no or only low qualifications.
3. A shortening of hours of work to 20—25 hours a week, and possibilities for people to change occupation if they like.
4. A continuous increase in the fraction of total incomes which is used for health and culture.
5. A change in the principle of remuneration for work into "to each according to his needs." A measure in this direction will be to start distributing the most elementary consumption goods free of any charge. Gradually a part of the present trade apparatus will be changed into an apparatus for the free distribution of such goods.

In view of the achievements of the USSR and the pace of scientific progress I think these points cannot be brushed aside as utopian even within a horizon of a few decades. The conscious preparation for the era of affluence in the USSR should also call for a reconsideration of the rather wide-spread opinion that a socialist system of the Soviet model may be an efficient system for promoting economic "take-off" and growth in an underdeveloped country, but that it is not an efficient system for solving the problems of a highly developed country.

DISCUSSION

Various observations were made by Professor Ragnar Frisch, Mr. Adl. Karlsson, Dr. Robert Lamberg, Mr. Torben Grage, Mr. Sigurd Sigurdsen, Dr. Rolf Krengel, Dr. Rudolf Neumann, Mr. Knud Erik Svendsen and the lecturer.

With reference to the Samuelsen-Solow "menu" it was suggested to add one more variable, namely the gross national product, and to relax the assumptions which led to the "menu." In this way one could analyze the loss incurred by sticking rigorously to the free market economy and not allowing the introduction of other and more direct means of control.

One speaker referred to the fact that the demonstration effect destroyed the preference system and the classical theory, and he could not find that the lecturer had a foundation for speaking about a more justified and optimal allocation of the resources than the one we have in the economy of the West. From another speaker observations were made on whether it was possible to explain the phenomenon of planned economy by pure economic explanations.

The value problem was discussed by another speaker, who also felt that Mr. Johansen went outside the borders of pure economic theory and that he did have a preference scale which could not be treated in purely economic terms. Regarding the definition, he stated that the use of the expression, "mixed economy," was more in agreement with modern economic theory than "capitalistic." The criteria of collective actions in a socialist society should have been pointed out more clearly. He found it very interesting that we now have a form of socialist theory which has left the traditional basis of attacking capitalism. The main focus of the new socialist theory is to attack excessive consumption.

With regard to the inflationary problems in Eastern European economies some comments were made on the lecturer's conclusions. One speaker thought there was a concealed price movement, mainly because of the discontinuation of production of certain goods. He doubted that the social mobility was greater in the Soviet Union than in the United States, and he felt that the lecturer transferred the problems from the economic to the political sector. Some speakers were rather critical about the comparison between the American and the Soviet economic system and about the official figures of the two countries.

Concerning the question of the extent to which judgement of values entered into the picture, Professor Frisch stated that as an economic analyst he relied on the politician in questions of technical details and formulations of goals. He reserved, however, the right to form his own opinion on questions of basic philosophical and moral character.

With relation to the investment quota in the Soviet Union, one speaker thought there were reasons to believe that the Soviet system still will have a quantitative advantage over the western societies, and that the country can keep its investment quota high. About the co-operation between the trade unions and the authorities he assumed that the independence of the trade unions will be growing. This development may disturb the balance between investment and consumption, and lead to a permanent problem in an economy of the Soviet type.

In his concluding remarks the lecturer observed that the welfare theory as such was not destroyed by him. What one may say is that the welfare theoretical proof of the optimal properties of a free competition economy was destroyed. On the other hand, the welfare theory takes care of the demonstration effects by the so-called indirect effects in consumption and production. About the general logical outline of his lecture he said tha he took as a starting point the problems raised by Galbraith. What he then did was to discuss whether the problem of affluency will be solved in the United States, and if similar problems will appear in the Soviet Union if or when the Soviet Union approaches a similar level of income per head. This can be done without introducing private value judgements. He did not think he had crossed the border line of economics as such. With reference to the price and inflationary problems, he thought the price movement on certain goods was mainly a problem of relative prices rather than the absolute price level itself. Concerning the demonstration effects, he found that most goods were of a mixed character, and the automobile was a very good example of how difficult it was to avoid these effects even in a socialist economy. About the social mobility, he thought the book by Thorkil Kristensen gave evidence to the fact that there is a higher mobility in the Soviet Union.

From Mr. Grage we have received the following written remarks, based on his contribution to the debate at the seminar:

SOME COMMENTS ON LEIF JOHANSENS LECTURE

By Torben Grage

In Mr. Johansen's lecture there occured a distinction of crucial importance, namely between human values and *real* human values. Furthermore, in his introductory remarks Mr. Johansen identified himself with the statement made by professor Frisch in his morning-lecture: that there are *higher* goals which we have to take into consideration when discussing the problem of economic developement. Mr. Johansen phrased his endorsement in the following way: "I would associate myself with the remarks that there are essential goals which possess a different quality from the components of the material welfare". I think it followed from the context that this was not something from which the ecconomist should keep himself aloof.

I find it quite evident that with statements of this sort we are outside the special domain of economics as an objective discepline. We are here dealing with values of a kind that cannot be handled by economics as a scientific undertaking based upon mathematics and statistics. We are here in the realm of politics, not least in its decision-making aspects and the problem of power in modern society. What sort of process do we want to help us adjudicate between individual and social values, and between various group-values.

But, of course, in this particular case where we are confronted with a distinction between human values and *real* human values the epistemological problems, that are staggering already when we talk of values only, become crushing. In the last instance appeal will have to be made to some subjective scale of preferences, most often wrapped in some sort of ideology. Most unfortunaly Mr. Johansen did not seem to recognize this problem but considered agreement about a preference scale a foregone conclusion or quite easily arrived at.

Using professor Galbraith and his affluent society as a stepping stone Mr. Johansen arrived effortlessly at the conclusion that if this is the true picture then all the advantages will lie with the Soviet Union. Well now, I think it is most problematic whether a spesific interpretation can be singled out to represent reality. And it becomes no less controversial when Mr. Johansen defines the American economy as a 'capitalist' one, and states as a matter of course that in the Soviet Union we find a 'socialist' society. Reality would seem in both cases to call for more caution.

However, what I am particularly concerned with in this connection are the wider political and social aspects of Mr. Johansen's reasoning. He found much encouragement in the fact that in the Soviet Union 'collective actions' took place against what he termed 'execssive consumption', none of the here used terms being particularly clearly defined though in a sense quite elucidating.

I would most definitely agree with the speaker that in Eastern Europe in general and the Soviet Union in particular the rulers are certainly at an advantage when it comes to putting pressure upon people to bring them into line. But — only by stretching the definition of collective action to the point of meaninglessness could actions of the above mentioned type be called collective. They would appear to be more adequately described in terms of command-actions.

Now, this may or may not be a very effective way of fighting 'excessive consumption' — if it is at all possible to define what this is, except may be in some limited situational context from which it would be very difficult to generalize — and it may also serve to strengthen the public sector in terms of gaining the acquiescense of the populace, however grudgingly, but it is very hard to see what it has to do with furthering *real* human values or human values at all which after all must involve the wants and wishes of individual human beings.

But we are left in the dark by Mr. Johansen as to the basic problem: why who shall decide what for whom by what means to what ends. And not the least relevant aspect when raising the issue of human values is the relationship between ends and means. If one does not recognize the question of ends and means. I think that it can be safely said that one has not recognized the dimensions of the human values problem. And this problem is not, by a long shot, solved only by aggrandizing the pecuniary means of the public sector at the expence of the private one, just as the public sector is not *eo ipso* synonymous with human values. They involve both the individual and his possibilities of participating in the political process, which is where a very important part of the content of human values are decided upon, economic as well as non-economic.

May I say, by the way, that I was quite fascinated by the new kind of 'socialist' theory developed by the speaker. It seems that this theory has left rather far behind it the traditional basis of criticism against so-called capitalism, in that it does no longer stress the impoverishment of the workers, does not, indeed-talk of the proletariate. Instead the main focus has become excessive consump, tion. And not the ''conspicuous consumption of the leisure-class'', but a consumption-pattern that has spread progressively to a wide and deep part of the population. I find this new theory quite an intriguing and sophisticated development.

My final remarks concern Mr. Johansen's very strong doubts about the ability of the United States to change the proportions between the private and public sectors to the advantage of the latter. Even if they so wanted, he seemed to think, they could not do so under the present politico-economic system; it would be axiomatically impossible; only under 'socialism' could a true balance be stricken. The lecturer himself, however, stated that here in Scandinavia we have found ways and means to balance the two sectors better than in the USA. And we certainly have not had to change to a basically different politico-economic system. And neither did the United States during the New Deal. The challenge of the times and the character and qualities of the political leadership will often be found to bring about far-reaching changes though without necessitating a fundamental ideological reorientation. This would appear to be true also of developements in the Soviet Union.

REJOINDER TO TORBEN GRAGE

By Leif Johansen

1. Many people believe that large public expenditures are important for attaining a rapid progress in culture, physical and mental health and social security. The definitions of these goals are of course outside economics as such. Also economics as such may not have very much to say about the problem whether great public expenditures are really necessary for these goals. However, the fact that so many people believe this to be true in my opinion makes it worth while to discuss the possibilities for great (or increasing) public expenditures on such accounts under different economic-political systems. *This* problem, which was a central one in my lecture, can hardly be said to be outside the field of economics, and it can, at least in principle, be discussed without invoking personal value judgements. Indeed, even the problem of determining an *optimal* (in the Paretian sense) amount of collective consumption is a classical one in the economics of public finance. It has been treated in precise terms for instance by P. A. Samuelson.¹) His analysis is based on purely individual preference scales. Some of my arguments concerning the problem of the "social balance" can (in a more complete exposition) be framed in the same sort of analysis as Samuelson's.

2. Suppose there are two individuals, no. 1 and no. 2, with preference scales or utility indicators U_1 and U_2. There are two goods x and y. The quantities consumed by no. 1 and no. 2 are x_1, y_1 and x_2, y_2 respectively. Suppose that good

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¹) See "The Pure Theory of Public Expenditures," *The Review of Economics and Statistics*, No. 4, 1954, with subsequent discussion.

y is used only for demonstrative consumption. The important thing for a consumer of good y is then whether he consumes *more of it than the other consumer*. The preference scales may then be for instance

$$U_1(x_1,\ y_1-y_2) \text{ and } U_2(x_2,\ y_2-y_1),$$

or

$$U_1(x_1,\ y_1/y_2) \text{ and } U_2(x_2,\ y_2/y_1).$$

Under a free enterprise economy resources will be used for the production of good y. However, one need not impose any preferences in addition to the two individuals' own preferences to say that they could both increase their level of satisfaction by some actions which reduced the consumption of good y (keeping y_1-y_2 constant in the first case, and y_1/y_2 constant in the second case) and used the resources released for good x, provided (as I said in the lecture) that the actions necessary to bring about this are not considered as evils in themselves.

Much of the analysis in section III of my lecture concerning "excessive consumption" which does not "add to human well-being" could be made precise in the way suggested here. It did therefore not depend upon the lecturer's own judgements about what are "real human values".

If good y is not used *only* for demonstration purposes, one could use preference functions as

$$U_1(x_1,\ y_1,\ y_1-y_2) \text{ and } U_2(x_2,\ y_2,\ y_2-y_1)$$

without changing the essence of the analysis.

3. Concerning the concept of "collective actions" I will only refer to Trygv Haavelmo, "The Notion of Involuntary Economic Decisions," *Econometrica*, No. 1, 1950. I used the word in the same sense in my lecture.

4. I do, of course, "recognize the question of ends and means". However, I did not discuss value judgements about various sorts of means or actions use in a socialist economy (or "human values" related to the use or non-use of suc means and actions) precisely because it is outside the scope of economics. In *complete* or final appraisal of an ecconomic system such judgements cannot b by-passed.